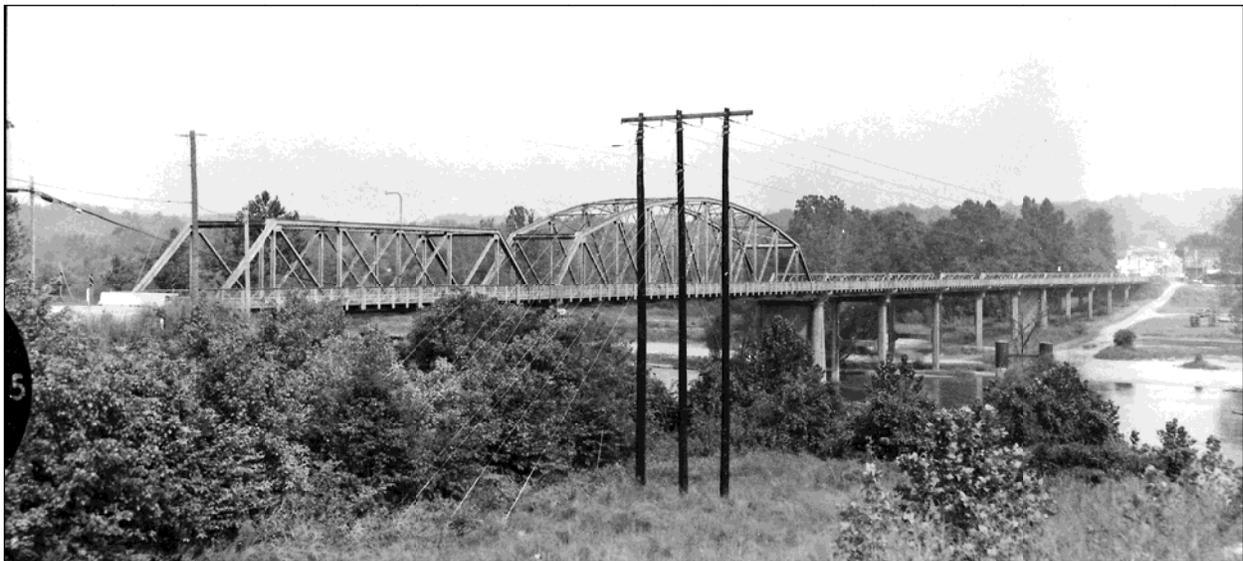

Documentation of the Historic Van Buren Bridge

Bridge No. G-712A1
Carter County, U.S. Route 60



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Van Buren Bridge
Spanning the Current River at
U.S. Route 60
Van Buren
Carter County
Missouri

HAER No. MO-90

PHOTOGRAPHS
WRITTEN HISTORICAL AND DESCRIPTIVE DATA

HISTORIC AMERICAN ENGINEERING RECORD
Rocky Mountain Regional Office
National Park Service
P.O. Box 25287
Denver, Colorado 80225-0287

HISTORIC AMERICAN ENGINEERING RECORD

VAN BUREN BRIDGE

I. INTRODUCTION

Location: Spanning the Current River at U.S. Route 60, Van Buren, Carter County, Missouri.

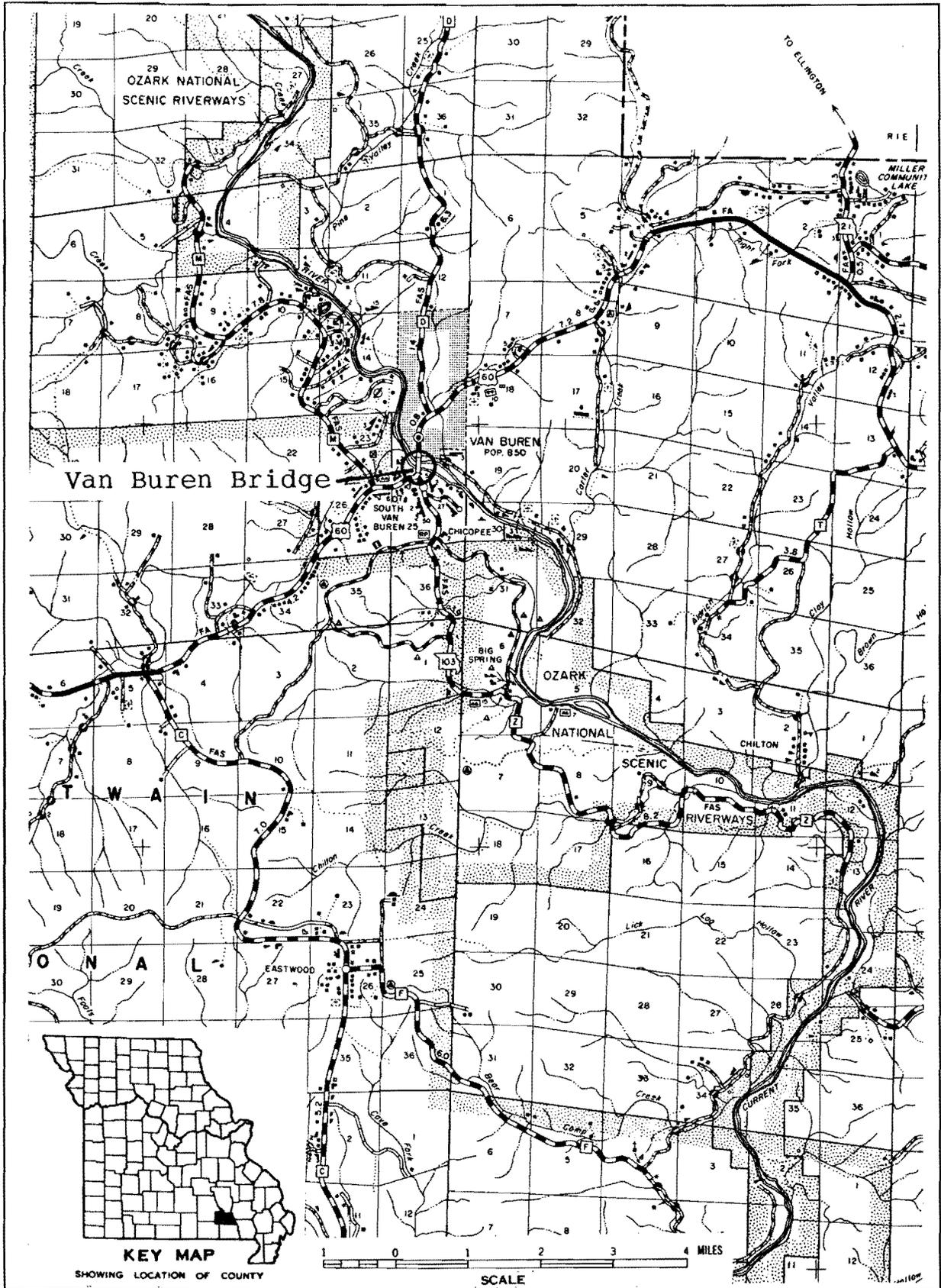
Construction Date: 1924-26.

Present Owner: Missouri Highway and Transportation Department, Jefferson City, Missouri.

Present Use: Closed to traffic, and scheduled for demolition in 1996.

Significance: The Van Buren Bridge is a multiple-span structure consisting of a six-panel Pratt through truss, a ten-panel Parker through truss, and ten Warren pony truss approach spans. It is one of Missouri's longest trussed crossings and is significant as an outstanding example of steel truss construction from the formative years of the Missouri State Highway Department.

Historians: David C. Austin and Steven Mitchell, Design Division, Missouri Highway and Transportation Department, Jefferson City, Missouri, December 1995.



II. HISTORY OF THE VAN BUREN BRIDGE

The Van Buren Bridge over the Current River at Van Buren, Carter County, Missouri, was designed and constructed in the mid-1920s under the auspices of the fledgling Missouri State Highway Commission, formed only a few years earlier in 1921. The bridge was among the first multiple-span bridges engineered by the Missouri State Highway Department, and would remain among the state's longest trussed crossings. The department built the bridge as a part of Missouri Route 16, one of the inter-county seat state highways then being developed as the foundation for Missouri's emerging road network. Route 16 had been planned as the major east-west highway across southern Missouri, connecting the larger cities of Poplar Bluff and Springfield by a somewhat circuitous track across the Ozark Mountains. A new bridge over the Current River, one of the region's largest streams, was a necessary component in the advancement of the highway. Its placement at Van Buren came solely from that town's status as a county seat.¹

Van Buren had been founded in 1833 as the county seat of Ripley County. It remained a small village through the antebellum years, hampered after 1847 when the county seat was relocated thirty miles south to Doniphan. Van Buren regained its county seat position with the formation of Carter County in 1859, but it was only after the Civil War that the town was officially platted. The region's mountainous terrain hindered growth and development until the late 1880s when the first railroads penetrated this portion of the Ozark Mountains, opening up immense tracts of pine and oak timber to large lumber corporations, and precipitating a tremendous economic expansion. One railroad, the Current River Branch of the St. Louis and San Francisco Railroad constructed in 1888-89, ran along the Current River opposite Van Buren, with a depot at Chicopee one mile further downstream. Despite the great lumber boom which swirled around it, Van Buren received very little

1. "Missouri Route Map showing Designated Routes and Numbers, Missouri State Highway Commission, Approved September 19, 1922," September 19, 1922, Minutes of Proceedings of Missouri State Highway Commission (MSHC), Secretary's Office, Missouri State Highway Commission, Jefferson City. Hereafter cited as Minutes, MSHC; Floyd Calvin Shoemaker, ed., Missouri and Missourians: Land of Contrasts and People of Achievements (Chicago: Lewis Publishing Company, 1943), 2:524-527; Clay Fraser, comp., "Van Buren Bridge," Missouri Historic Bridge Inventory, Missouri Highway and Transportation Department, Project No. NBIH(6) (Loveland, Colorado: Fraserdesign, 1991-), n.p.

economic impetus, stifled by the lack of railroad facilities within the town itself and by the restrictive distance to the Chicopee depot on the other side of the river.²

To connect Van Buren with the railroad, twenty local citizens formed a bridge company, raised \$4,500, and built a suspension toll bridge across the Current River in 1893-94. The bridge facilitated commercial wagon traffic between Van Buren and Chicopee for the next decade until the bridge was washed out during a record flood in March 1904.³ Subsequently, Van Buren remained isolated from its railroad connection for another four years until business interests and private citizens roused themselves once again. By June 1908, half the monies needed for a new bridge--some \$4,500--had been raised privately, with donors including such major corporate entities as the Southwest Land and Orchard Company and the Missouri Lumber and Mining Company. The Carter County Court appropriated the remaining \$4,500, solicited bids, and in August 1908 awarded the contract for construction of the new bridge to the Missouri Bridge and Iron Company of St. Louis. Gaining approval of the project by Congress and the War Department delayed the start of construction for another year. Finally, at the end of December 1909, Van Buren's vital link to the railroad line was reestablished.⁴

The new bridge, a 240' Parker through truss with an 800'-long wood trestle, induced the Missouri Lumber and Mining Company in the following year to plat a new town

2. A. S. J. Carnihan, "History of Carter County," unpublished manuscript, n.d., in "History of Van Buren" Vertical File, Carter County Regional Library, Van Buren, 1-5; Goodspeed Publishing Company, A Reminiscent History of the Ozarks Region, Comprising a Condensed General History, a Brief Descriptive History of Each County, and Numerous Biographical Sketches of Prominent Citizens of Such Counties (Chicago: Goodspeed Publishing Company, 1894), passim; Gene Oakley, The History of Carter County (Van Buren: J.G. Publications, 1970), 6; Eunice Pennington, History of Carter County (n.p., 1959), 9-10; Milton D. Rafferty, The Ozarks: Land and Life (Norman: University of Oklahoma Press, 1980), 173-184.
3. Pennington, History, 11; Oakley, History, 45-46; Eminence Current Wave, 31 March 1904.
4. Van Buren Current Local, 11, 28 June, 2, 9 July, 13, 27 August, 10 September 1908, 4 February, 15 April, 12, 26 August, 16, 23 September, 7, 14 October, 4, 11 November, 2, 16, 23, 30 December 1909.

called South Van Buren, located adjacent to the railroad directly across the river from Van Buren. In 1913, the railroad company built a depot at South Van Buren (still a "paper" town) directly at the foot of the bridge. Van Buren accrued little if any benefits from these overdue improvements; the county's timber industry had by then essentially vanished, and the local economy was in a sharp decline. Matters worsened in August 1915 when a flood swept away one of the bridge piers and carried the metal truss several hundred feet downstream. The local editor lamented the disaster, saying "The bridge was quite a convenience to the people of this vicinity who trade at Van Buren and its loss is greatly deplored by all the people of the county."⁵

This time the county court moved quickly to repair the structure and within the month contracted with the Midland Bridge Company to salvage the twisted metal truss and raise the piers another 4'-10" to ensure against future rampages of the river. The repairs were yet underway in January 1916 when the Current River rose again, washing out the replacement pier plus a second pier on the south bank. The flood also carried off the falsework support for the steel span, tore away part of the wood trestle approach, and undermined the nearby railroad embankment. It was several more months before the bridge repairs were completed.⁶ The battered structure held up for the next seven years, during which time Carter County continued its economic decline. Its final major industry, the Midcontinent Iron Company located ten miles west of Van Buren, closed its plant in 1921; the company town of Midco with over 3,000 residents quickly disappeared.⁷

The start of construction of Route 16 in early 1923 thus came at an auspicious time for Carter County which could hope to benefit from the resulting increase in jobs, traffic, and tourism. Beginning improvements to the first sections of the highway basically involved grading, straightening, and widening pre-existing county dirt roads, and marking the route every mile with oblong cast-iron sign

5. "Plat of South Van Buren," 1910, Carter County Plat Book, 31, Recorder's Office, Carter County Courthouse, Van Buren; Van Buren Current Local, 10 April 1913, 26 August 1915; Missouri State Highway Commission, "Plan and Profile of Proposed State Road, Carter County, Route 16, Section 65," 1926, Plans and Records Office, Design Division, Missouri Highway and Transportation Department, Jefferson City; Oakley, History, 95-105.
6. Van Buren Current Local, 30 September 1915, 3 February, 30 March, 3 August 1916.
7. Oakley, History, 129-135.

posts; arrows pointed the way wherever the roadway forked. In September 1923 highway workers out of the department's Division No. 9 headquarters at Willow Springs inspected the Van Buren bridge. They reported the truss in poor condition and the concrete piers in fair condition. Based on the inspection, department engineers concurred that a new bridge over the Current River was obviously warranted, but funding for Division No. 9 for 1924 totaled only \$72,000,⁸ an insufficient amount to cover construction costs.

The highway department subsequently condemned the old bridge but it nevertheless continued to be used. In late March 1924, in the wake of an accident on the structure, the Van Buren Current Local noted that "people of this section are beginning to wish the state would hurry its plans for the new concrete bridge, replacing the present structure."⁹ The South Missouri Cross State Highway Association brought more substantial pressure the following month when they approved a lengthy resolution urging the Missouri State Highway Commission to authorize the bridge construction. The resolution pointed out that the old bridge was condemned and "in a very dangerous condition and will not support heavy traffic nor withstand high waters." The resolution concluded that "the citizens of this section feel that every effort possible should be made to hasten the construction of the proposed bridge."¹⁰ J. H. Long, the Division Engineer at Willow Springs, hopefully forwarded the resolution to Jefferson City, but again was told that the bridge project would be delayed for at least a year until additional funds became available.¹¹

Within another month, however, highway department engineers had begun their design of the Van Buren Bridge using standard plans of the major truss and pier types, and working in concert with Long's division which conducted the on-site surveys.¹² By the end of July 1924 the bridge plans

8. Van Buren Current Local, 6 September 1923; J. H. Long to C. D. Mann, 9 October 1923; "Missouri State Highway Department, Bridge Report," 19 September 1923; L. J. Sverdrup to J. H. Long, 21 January 1924, Van Buren (Current River) Bridge File, Bridge Division, Missouri Highway and Transportation Department (MHTD), Jefferson City. Hereafter cited as Bridge File, MHTD.
9. Van Buren Current Local, 3 March 1924.
10. Ibid., 24 April 1924.
11. M. S. Murray to J. H. Long, 24 April 1924, Bridge File, MHTD.

were completed; advertisements for construction bids appeared in the Van Buren Current Local, which remarked,

This is an event long looked for by the people of this county and the work of construction cannot start too soon, as the spending of a hundred thousand dollars on a job in this community, even though not much of it may go for local material or labor will be of natural benefit generally.

The newspaper further anticipated, "When completed it will be the finest [bridge] on road 16."¹³

On August 12, 1924, the highway department let the construction contract for the Van Buren Bridge to the Kansas City Structural Steel Company of Kansas City, Kansas, for the amount of \$114,553.28. Records do not indicate where the money was obtained. In approving the contract three days later, the highway commission may have been counting on the passage of Proposition 5 in November, an initiative designed to bring additional revenues for state road and bridge construction. (The state-wide measure did pass by a two-to-one margin.) The St. Louis and San Francisco Railroad reportedly supplied some money for the portion of the bridge above the railroad tracks. Soon after winning the contract, Kansas City Structural Steel began preparing their detailed shop drawings for the steel spans. The company sublet the construction of the substructure and the concrete bridge floor to M. E. Gillioz of Monett, Missouri.¹⁴

The M. E. Gillioz crews, headed by superintendent J. R. Wygle and construction foreman J. M. Grizzle, arrived in Van Buren on December 1 and began erecting storage facilities while clearing the site for the south abutment. J. G. Lester would represent the highway department as the project engineer. Soon after excavations began, problems from

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12. L. J. Sverdrup to J. H. Long, 28 May 1924; J. H. Long to B. H. Piepmeier, 6 June 1924; B. H. Piepmeier to J. H. Long, 9 June 1924, *ibid*.
 13. Van Buren Current Local, 31 July 1924.
 14. Kansas City Structural Steel Company to B. H. Piepmeier, 10 September 1924; B. H. Piepmeier to Kansas City Structural Steel Company, 11 September 1924; B. H. Piepmeier to M. E. Gillioz, 11 September 1924, Bridge File, MHTD; Van Buren Current Local, 31 July, 25 September, 4 December 1924; "Approval of Contracts," 15 August 1924, Minutes, MSHC; Shoemaker, Missouri and Missourians, 2:528.

varying elevations of the bedrock on the short bluff above the riverbank forced design changes in Abutment No. 1. Engineers at Division No. 9 made preliminary sketches of the proposed changes which strengthened the anchorages of the wing ends; bridge engineers in Jefferson City then refined the construction drawing, finishing it at the end of January 1925. M. E. Gillioz was finally able to pour the first concrete at Abutment No. 1 on February 10 after more than a month's delay. By that time the contractor's crew was erecting a derrick for the construction of Pier No. 2, and soon started building a "runway" stretching the length of the broad, sandy floodplain on the north side of the river to provide access to the pier and bent sites.¹⁵

Meanwhile, other changes to the original bridge design were made after Bridge Engineer Leif Sverdrup decided to eliminate one 80'-span from the north approach. In November 1924, after Long had first suggested the idea, Sverdrup had made an on-site inspection and recommended then to retain the span. By late December, however, Sverdrup had reconsidered and agreed the end span was "ineffective" with respect to the ground elevation there. After another personal field inspection in late January 1925, Sverdrup definitely concluded that the end span should be eliminated. The decision consequently forced other design changes, most notably in the configurations of several bents and piers: the positions of Bent No. 8 and Pier No. 9 were reversed; Bent No. 13 was eliminated and replaced with Bent No. 14; and the relative heights of the bents were adjusted.¹⁶

Thereafter, M. E. Gillioz' work on the substructure proceeded fairly uneventfully, if not smoothly. In late May, their large derrick broke down. The company substituted a smaller derrick and increased the work force to two crews. In June, one concrete footing of Pier No. 2

15. Van Buren Current Local, 4 December 1924, 12, 19 February 1925; J. H. Long to B. H. Piepmeier, 12 December 1924; B. H. Piepmeier to J. H. Long, 17 December 1924; J. H. Long to W. M. Spann, 8 January 1925; B. H. Piepmeier to J. H. Long, 9 January 1925; B. H. Piepmeier to J. H. Long, 23 January 1925, Bridge File, MHTD.

16. B. H. Piepmeier to J. H. Long, 2 December 1924; B. H. Piepmeier to Kansas City Structural Steel Company, 22 December 1924; L. J. Sverdrup, "Carter County, Bridge over Current River, Route 16, Section 64," inspection report, n.d.; B. H. Piepmeier to Kansas City Structural Steel Company, 6 February 1925; B. H. Piepmeier to J. H. Long, 6 February 1925; B. H. Piepmeier to J. H. Long, 9 February 1925, *ibid.*

had to be removed and repoured when defective cement was suspected. This caused a two-week delay as new cement was shipped in. Forced to rent another cement storage building in Van Buren, the men from M. E. Gillioz were inconvenienced thereafter in transporting the cement from the railroad to town and back to the bridge site as the cement was needed. They also were diverted during the summer to reflooring and making other, nearly constant repairs to the old bridge which rapidly deteriorated from the frequent heavy loads. The highway department posted load warnings, and the Van Buren Current Local advised residents to use caution in crossing the old structure: "Unless greater care is taken by the traffic over the bridge we believe that the occurrence of a bad accident caused by the bridge giving way is only a matter of time," the newspaper warned. In addition, the crews from M. E. Gillioz had to carry excavations for certain bent footings down an extra 7' to 10' through gravel, clay and loose sedimentary rock before solid bedrock was finally reached. The extensive water seepage through the sediments into the excavations proved nearly impossible to control, even with "three good big pumps working night and day." Another construction delay came in September 1925 as M. E. Gillioz waited for two weeks for the design changes for the northernmost bent's footings and retaining wall, which were not completely finalized until mid-October.¹⁷

The Kansas City Structural Steel Company had meanwhile shipped the first steel members for the six-panel Pratt truss in late May 1925. Under the company's construction superintendent Joseph H. Gordon, the steelworkers assembled the pieces on the ground and lifted the trusses into place with a giant derrick placed on the river bluff. Through the summer and fall, the main Parker span and the ten Warren pony trusses went up without apparent incident, but with one procedural flaw. The workers did not completely rivet the spans as they went along, which caused M. E. Gillioz serious delays in pouring the bridge floor. The sub-contractor was able to pour the concrete slabs on only three of the completed 80' spans before cold weather set in and the crews departed for the winter.¹⁸

17. B. H. Piepmeier to J. G. Lester, 9 July 1925; J. H. Long to W. M. Spann, telegram, 7 September 1925; B. H. Piepmeier to J. G. Lester, 23 September 1925; B. H. Piepmeier to J. H. Long, 23 September 1925; B. H. Piepmeier to J. H. Long, 16 October 1925; L. J. Sverdrup to T. H. Cutler, 21 December 1926; M. E. Gillioz to T. H. Cutler, 29 December 1926; B. H. Piepmeier to M. E. Gillioz, 3 January 1927; M. E. Gillioz to L. J. Sverdrup, 20 October 1925, *ibid.*; Van Buren Current Local, 4 June, 6 August 1925.

Even as the November construction deadline approached, the highway department realized it necessary to gain a permit for the nearly-completed structure from the U.S. War Department. In October 1925, the highway department forwarded bridge plans and tracings along with data on high water elevations to Major Donald H. Connolly of the Corps of Engineers. The department also assured Connolly that the old bridge would be removed, thereby negating requirements for another act of Congress to authorize construction. Connolly's office misplaced the permit application; additional copies were forwarded in February 1926. In late March, Connolly informed the highway department that since construction of the bridge had already commenced without prior approval from the Chief of Engineers and Secretary of War, the bridge would be considered an illegal structure until Congress acted to authorize its construction and maintenance. Connolly allayed this bad news, however, adding that the War Department would not seek removal or modification of the new bridge unless it proved "unreasonably obstructive to navigation." The highway department contacted U.S. Representative Charles Kiefner, whose 13th District included Van Buren. Kiefner responded quickly, and in early April introduced a bill allowing the Missouri State Highway Commission to construct a bridge across the Current River. The bill was referred to the Committee on Interstate and Foreign Commerce, and eventually passed later in June.¹⁹

By April 1926, completion of the bridge was more than four months overdue, and work had not yet resumed. The highway department's Chief Engineer B. H. Piepmeier berated the Kansas City Structural Steel Company for the long delay, stating the situation was "very unsatisfactory," and insisting that the contract be completed immediately. Piepmeier reminded them that the highway department was assessing liquidated damages against the company at \$40 a day, and threatened to charge them with repair costs to the

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18. Ibid., 4 June 1925; L. J. Sverdrup to T. H. Cutler, 21 December 1926; M. E. Gillioz to T. H. Cutler, 29 December 1926; B. H. Piepmeier to M. E. Gillioz, 3 January 1927, Bridge File, MHTD.
19. Donald H. Connolly to B. H. Piepmeier, 29 September 1925; B. H. Piepmeier to J. H. Long, 2 October 1925; J. G. Lester to J. H. Long, 6 October 1925; B. H. Piepmeier to Donald H. Connolly, 29 October 1925; B. H. Piepmeier to Donald H. Connolly, 1 February 1926; Donald H. Connolly to B. H. Piepmeier, 22 March 1926; B. H. Piepmeier to Charles E. Kiefner, 1 April 1926; Charles E. Kiefner to B. H. Piepmeier, 6 April 1926; P. R. Van Frank to B. H. Piepmeier, 6 July 1926, *ibid.*

old bridge--then "in a very precarious condition"--if the new bridge were not completed soon.²⁰

After completing another job in Dent County, Missouri, the crews of M. E. Gillioz eventually returned to Van Buren in the spring and finished the bridge's concrete floor, pouring the last section at the south end on June 23, 1926. (Several over-anxious visitors who ignored the barriers and crossed the bridge prematurely were fined \$5 for damaging the wet concrete.) The Carter County Chamber of Commerce soon began planning dedication ceremonies for the new structure, "said by many to be the finest bridge in the entire Middle West." The Van Buren Current Local anticipated, "This [dedication] will unquestionably be the biggest event ever held in Carter County, if not in this entire section of the state." At 10 A.M., Saturday, July 17, the dedication ceremonies opened before a crowd estimated at over 8,000 people. Chief Engineer Piepmeier, Highway Commissioner Hugh Stephens, and Missouri Governor Sam A. Baker each spoke in praise of the new bridge and Missouri's expanding highway network. Miss Irene Coleman, "Carter County Queen," then cut a ribbon strung across the north approach and officially opened the bridge to a parade of some 600 cars, while the American Legion Band of Poplar Bluff played nearby. Later that afternoon, Governor Baker dedicated Big Spring State Park located a few miles south of Van Buren. Major Connolly of the Corps of Engineers meanwhile took advantage of the presence of the highway officials and conducted his requisite inspection of the bridge for the War Department.²¹

As a crucial link in Missouri's southern-most cross-state highway, the Van Buren Bridge not only served local and state traffic using Route 16, but soon carried national traffic after the highway became a part of U.S. Route 60 in 1929. With increased accessibility to the Current River region, vacationers soon turned Van Buren into a principal recreational and resort center in the eastern Ozarks. In 1927-29 the Rose Cliff Hotel arose on the bluff in South Van Buren overlooking the new Van Buren Bridge; the hotel became a favorite destination for many travelers as well as a shared retreat for ardent conservationists. In the 1930s, as Missouri continued to develop Big Spring State Park near Van Buren, the federal government through the U.S. Forest

20. B. H. Piepmeier to Kansas City Structural Steel Company, 1 April 1926, *ibid.*

21. Van Buren Current Local, 24 June, 1, 10, 15, 22 July 1926; B. H. Piepmeier to P. R. Van Frank, 7 July 1926; Donald H. Connolly to B. H. Piepmeier, 13 July 1926, Bridge File, MHTD.

Service acquired thousands of acres in Carter County which became part of Clark National Forest. The renewed beauty of the area's natural resources which centered around the Current River continued to attract increasing numbers of visitors. Within fifteen years after completion of the bridge a guidebook to Missouri reported, "Almost every other house [in Van Buren] offers tourist accommodations, and several boat lines operating on the river offer fishing and float trips."²²

During these early years of the growing tourism industry, numbers of pedestrians began using the Van Buren Bridge as a promenade between Van Buren's business district and the growing developments in South Van Buren. In April 1933, the Van Buren Chamber of Commerce contacted the highway department about the feasibility of constructing an attached "footbridge" for the pedestrians' use. In its request, the chamber cited the hazards of the bridge to children who routinely crossed the structure on their way to school. After discussing the matter with the department's bureau chiefs, Bridge Engineer N. R. Sack responded that because of the unusual length of the bridge, an attached sidewalk would cost an estimated \$9,000, too large a sum in a time of fiscal crisis to warrant the expenditure.²³

The idea for a pedestrian walkway festered for three more years until N. N. Ropes, Division No. 9 Engineer, began insisting that one was necessary. Ropes provided statistics and photographs to convince Sack of the large amount of foot traffic on the bridge. In August 1936, Sack approached the retiring Chief Engineer, T. H. Cutler, who agreed to the proposal and ordered plans for a walkway to be drawn up. In November, Sack advised the new Chief Engineer, C. W. Brown,

22. Lynn Morrow, "Rose Cliff Hotel," National Register of Historic Places Inventory-Nomination Form, 15 December 1981, Historic Preservation Program, State Historic Preservation Office, Missouri Department of Natural Resources, Jefferson City; Rafferty, The Ozarks, 219; Work Projects Administration (WPA), Missouri: A Guide to the Show-Me State (Duell, Sloan and Pearce, 1941; reprint, The WPA Guide to 1930s Missouri, Lawrence: University Press of Kansas, 1986), 429-430.
23. The Chamber of Commerce had made the same request for a pedestrian walkway in July 1925 when the bridge was under construction, but was told the City of Van Buren would have to provide the \$8,000 for its construction. T. H. Brokaw to B. H. Piepmeier, 3 July 1925; B. H. Piepmeier to T. H. Brokaw, 13 July 1925; E. P. Lewis to T. H. Cutler, 25 April 1933; N. R. Sack to E. P. Lewis, 2 May 1933, Bridge File, MHTD.

of Cutler's former opinion while pointing out that the \$16,000 needed for the project could come from the regular bridge maintenance funds. Brown, in turn, presented the matter before the Missouri State Highway Commission in December and gained their unanimous approval for the construction of the attached sidewalk.²⁴

The subject, however, apparently raised concerns among commission members about funding other proposed bridge walkways, particularly in Boonville and Waynesville, Missouri. At the February 1937 commission meeting Brown explained his reasoning for supporting these projects as well as the one at Van Buren. The commission, "after some discussion," requested detailed reports be submitted from which they would make their final decisions. Accordingly, Ropes' division compiled traffic counts at the Van Buren Bridge, showing 833 pedestrians crossed over the structure during two twelve-hour periods, while vehicular traffic for the same time totaled 1,463. Brown presented these numbers (and other traffic counts for Boonville and Waynesville) at the March commission meeting. He also provided an estimate of \$18,500 for constructing the Van Buren walkway. The commission gave their assent to all three of the projects.²⁵

Bids for furnishing the construction materials were not solicited until the end of the year. The Reynolds Manufacturing Company of Springfield, Missouri, won the supply contract in December 1937, with a low bid of \$6,230. The company also drew up the detailed shop drawings. Highway department construction forces out of Ropes' division started construction of the walkway soon after February 10, 1938, when the materials arrived at the Chicopee depot. The Van Buren Current Local hailed the work as "the greatest move for safety on Route 60 in Carter County made so far" After the walkway was essentially completed in late May 1938 (painting the structure would be completed in August) the newspaper again extolled the bridge and its new pedestrian walkway. "As the

24. N. R. Sack, "Memorandum to Mr. C. W. Brown, 27 November 1936, *ibid.*"; "Construction of Sidewalk on Current River Bridge, Route 60, Carter County," 3 December 1936, Minutes, MSHC.
25. "Sidewalks, Van Buren, Waynesville, and Boonville Bridges," 9 February 1937; "Pedestrian Walks on Van Buren, Boonville and Waynesville Bridges," 9 March 1937, *ibid.*; N. R. Sack to N. N. Ropes, 10 February 1937; "Traffic Count, Van Buren Bridge, Route 60, Carter County," 15, 20 February 1937; N. R. Sack, "Memorandum to Mr. C. W. Brown," 1 March 1937, Bridge File, MHTD.

bridge now stands it is one of the safest highway bridges in the state so far as traffic is concerned. . . . Van Buren now has a bridge to be proud of. It is at the gateway to the playground of Missouri."²⁶

III. DESCRIPTION OF THE VAN BUREN BRIDGE

(See HAER Photographs MO-90-29 through MO-90-40 for construction drawings).

The Van Buren Bridge (Bridge No. G-712A1) spanning the Current River consists from south to north of a six-panel Pratt through truss 120'-0" in length; a 200'-0", ten-panel Parker through truss; and ten Warren pony truss approach spans each 80'-0" long. The total length of the bridge is 1,136'-11". It has a 20'-0" roadway width (see Photographs MO-90-1 and MO-90-2). The substructure consists of reinforced concrete piers and bents resting on solid rock. Superstructure components are riveted steel.

Abutment No. 1 on the south river bank is a full-height abutment with tapered wingwalls (see Photograph MO-90-3). Because of the natural slope of bedrock at this location, the total heights of the breastwall, wings, and bearing seats, as well as the lengths of the two wings, are variable. The footings for the two column bearing seats are 5'-0" x 3'-6" x 1'-8"; the column shafts are 4'-0" x 2'-4". The breastwall and wings total 40'-8 1/2" in length and are 1'-5" wide. A rear counterfort extends back into the bedrock from the eastern wing end.

Pier Nos. 2 and 3 which support the 200' Parker span, and Pier No. 8 at the midpoint of the north approach, are column piers with solid web walls 11" thick. Each are of a similar design but vary slightly in their dimensions. Pier No. 2 in the river's main channel (see Photographs MO-90-4 and MO-90-5) has double foundation footings 10'-9" square and 5'-0" high. The pier's battered cylindrical column shafts have a basal diameter of 9'-2" and rise 52'-0" to a top diameter of 4'-10". The coping is 1'-6" thick and 4'-10" wide.

26. C. W. Brown, "Bridges: Construction Materials," 24 November 1937; C. W. Brown to Reynolds Manufacturing Company, 22 December 1937; Bridge Engineer to C. E. Stucky, 10 February 1938; C. W. Brown to N. R. Sack, 1 June 1939, *ibid.*; Van Buren Current Local, 27 January, 19 May, 1938. A new bridge replacing the old structure opened to traffic on June 15, 1994.

Pier No. 3 (see Photographs MO-90-6 and MO-90-7), slightly smaller than Pier No. 2, has footings 10'-6" square and 5'-0" high. The pier columns are 48'-1" high, with a diameter ranging from 9'-0" at the base to 5'-0" at the top. Its coping is similar to Pier No. 2, with the centers of the bearing seats spaced 22'-6" apart.

Pier No. 8 (see Photograph MO-90-8) was originally designed for the Pier No. 9 position, but was shifted south with the elimination of the end 80' span. The original design plan shows the pier with paired footings 8'-9" x 8'-9" x 5'-0", and battered cylindrical columns ranging in diameter from 7'-3" to 4'-3". The height of the Pier 9 columns as shown on the design plans is 36'-1", but was increased to conform to the grade elevation in its new position. The centers of the bearing seats are spaced 22'-2" apart.

The remaining eight bents which support the ten Warren pony truss spans are open bents (see Photographs MO-90-8 through MO-90-10). All are of similar dimensions except for their total heights, which range from 53'-9" at Bent No. 4 to 38'-0" at Bent No. 12, to form a 1.5 percent grade. The bent footings measure 5'-6" x 6'-6" x 2'-6". Rectangular columns are 2'-6" x 3'-6", with the sides of the columns flaring at the tops to support the bents' copings. Cross struts 2'-6" square have flared ends at the column joints. The tops of the cross struts are placed 17'-6" from the bottoms of the bent copings, which measure 3'-3" high x 4'-0" wide x 27'-8" long. The centers of the bearing seats are 22'-2" apart.

End Bent No. 13 (originally designed as Bent 14) is an open abutment with paired foundation footings measuring 15'-9" x 5'-0" x 3'-0". Front battered columns, spaced 22'-2" apart at their centers, measure 11'-9" x 3'-0" at the base and are 30'-0" high. Flared ends bring the top dimensions to 8'-0" x 3'-4" to support the coping. The coping which forms the bearing seats is 2'-6" high and 2'-4" deep, and is backed by 6"-thick tapered wingwalls 37'-9" long.

Span No. 1 at the south end of the bridge is a six-panel Pratt through truss 120'-0" long, with a normal panel length of 20'-0", and a truss height of 20'-0" (see Photographs MO-90-11 through MO-90-17). The inclined end posts and upper chords are built of two 12" channels with cover plates, single lacing, and tie plates. The lower chords are two 10" channels with batten plates. Vertical posts consist of two built-up channels (four angles) with single lacing. Diagonal members are two angles with batten plates. Portal struts and bracing were to be of two angles with lacing, and interior struts and sway bracing were to be of two angles, but instead the portals consist of wide-

flange I-beams, and the struts of I-beams. Top and bottom laterals are single angles. The floor system (see Photograph MO-90-17) consists of 26" I-beam end floor beams and 28" H-beam intermediate floor beams, with seven 15" I-beam stringers, a concrete deck and concrete curbs. The guardrails are built with angle posts and steel pipe rails.

Span No. 2 over the main channel of the Current River is a ten-panel Parker through truss 200'-0" long, with a normal panel length of 20'-0". The hip ends are 20'-0" high, and the center of the through truss is 33'-4" high (see Photographs MO-90-18 through MO-90-23). The polygonal upper chords and inclined end posts are built of two 15" channels with cover plates and single lacing. The lower chords are two 15" channels with batten plates. The hip verticals consist of two built-up channels (four angles) with lacing. Vertical posts are two 8" channels with lacing. Diagonal members are two angles with batten plates. The portals as originally designed were to consist of a brace system of angles and plates, but are composed of wide-flange I-beams. Sway bracing of the interior panels are two-angle struts and single-angle cross braces. Top and bottom laterals are single angles. The floor system is similar to that of the Pratt truss.

Each of the ten Warren pony truss spans forming the north approach are 80'-0" long, with four panels of 20'-0" as applied along the lower chords. Truss height is 9'-0" (see Photographs MO-90-24 through MO-90-27). The inclined end posts and upper chords are constructed of two 10" channels with cover plates and single lacing. The lower chords are built of two 10" channels with batten plates. Vertical posts are four angles with continuous plates. Diagonals are two angles with batten plates. The floor system is similar to that of the through truss spans.

The only significant modification to the Van Buren Bridge was the addition of the cantilevered sidewalk on the east side (see Photograph MO-90-28). The walkway is supported at each panel point by brackets constructed of paired angles and 3/8" web plates, attached to the lower chord. Intermediate deck supports consist of 6" channels. Top and bottom rails are single angles, connected to 4" Zee rail posts spaced 5'-0" apart, with 2" cross-bars between the posts and a covering of galvanized wire mesh. The sidewalk is 5'-0" wide and has a 4"-thick reinforced concrete deck.

IV. CONSTRUCTION CONTRACTORS

A. KANSAS CITY STRUCTURAL STEEL COMPANY

The Kansas City Structural Steel Company, which fabricated the steel and erected the superstructure of the Van Buren Bridge, was founded in 1907 by Howard A. Fitch and Olaf C. Smith. The two men had first become acquainted in the 1890s while employed with the Gillette-Herzog Steel Company, and later with the Minneapolis Steel and Machinery Company.²⁷

Howard A. Fitch was born in Warrensburg, Missouri, in 1868. He studied surveying and engineering at the State Normal School in Warrensburg before moving to Kansas City where he began his engineering career as a rodman on a surveying crew for the Kansas City Cable Railway Company. In 1890, Fitch became a draftsman at the Gillette-Herzog Steel Company in Minneapolis, Minnesota. He advanced into the company's sales department where he successfully promoted the use of steel in the western mining industry, and in 1897 became a contracting engineer, directly overseeing construction projects. In 1902, Fitch became the chief engineer in the structural department of the newly-formed Minneapolis Steel and Machinery Company. He remained in that position until 1907 when he organized the Kansas City Structural Steel Company with Olaf C. Smith.²⁸

Olaf C. Smith was born in 1872 in Green Bay, Wisconsin, and grew up in rural Iowa. After receiving his engineering degree from the University of Minnesota, Smith became assistant to the shop superintendent at Gillette-Herzog in Minneapolis, later being promoted to shop superintendent. He joined the Minneapolis Steel and Machinery Company in 1904 as its shop superintendent where he remained until forming his partnership with Fitch in early 1907.²⁹

After forming the Kansas City Structural Steel Company with Fitch as president, Smith as vice president, and \$75,000 in capital, the two men purchased an abandoned lead and silver smelting plant in Argentine, Kansas, located adjacent to the Atchison, Topeka, and Santa Fe Railroad at the Kaw River. The smelting plant had been in operation from 1880 to 1901, and had been one of the largest in the world in size and in value of its refined products. The surrounding town of Argentine then had a population of about 8,000. It would be annexed to Kansas City, Kansas, in 1910.

27. Edwin D. Shutt, II, "Silver City: A History of the Argentine Community of Kansas City, Kansas" (M.A. Thesis, Emporia Kansas State College, 1976), 63-66.
28. Ibid., 63-64, 76-77; Kansas City Times, 3 November 1953.
29. Shutt, "Silver City," 65, 76.

Fitch and Smith paid about \$50,000 for the eighteen-acre plant, but were able to recoup the purchase price by salvaging silver and lead from the old ore dumps they found on the property. Their first contract was for a store addition in Kansas City; they soon gained other steel-fabrication contracts for the YMCA, Sharp, and Boley buildings in Kansas City. Sales in their first year totaled \$7 million.³⁰

The company soon branched out into supplying structural steel for copper mines and smelting plants in the western United States. Smith and Fitch were greatly aided in this portion of their business by their Chief Engineer, Alfred M. Meyers, who joined the company in 1908. Meyers had an engineering degree from the University of Kansas, and had formerly been employed by the King Bridge Company in Cleveland, Ohio, and the Wisconsin Bridge Company in Milwaukee. In addition to designing mining facilities for Kansas City Structural Steel, Meyers also designed highway and railroad bridges and other industrial structures. He would remain with the company for nearly forty years. Other principal associates in the Kansas City Structural Steel Company included Thomas W. McCurnin, manager of the company's erection department. He, too, would remain with the company for nearly forty years. Neil G. Lilley, who had worked with Smith and Fitch at Minneapolis Steel and Machinery, came with them to Argentine in 1907, and served some fifty years as general sales manager, secretary, and eventually vice president.³¹

Fitch and Smith successfully built up their company into one of the largest steel facilities in the middle west. During World War I, they received government contracts for railroad tank cars, ship rudders, and structural steel for ships. By 1919, with 500 employees, Kansas City Structural Steel Company stood as the largest steel fabricator west of Pittsburgh. During the 1920s, when the company erected the Van Buren Bridge, its steel shipments averaged over 36,600 tons per year, and the company garnered gross annual revenues of up to \$6 million. As well as providing structural steel for buildings--including many major buildings in Kansas City--the company built bubble towers and storage tanks for the oil industry, continued erecting facilities for the mining and smelting industry, and erected numerous bridges and other types of steel structures. In 1929 the company invested \$300,000 in a major addition to its plant; one of the company's major achievements came that year when it built the Grand Canyon Bridge over the Colorado

30. Ibid., 66-68.

31. Ibid., 68-69.

River at Lee's Ferry, Arizona. In 1930, the company completed a cantilevered through truss bridge over the Missouri River at Hermann, Missouri.³²

The steel company was hard-hit in the early 1930s by the Great Depression which strangled manufacturing and construction nationwide. The Kansas City Structural Steel Company quickly declined in both output and manpower. In 1932, it was down to 130 employees. In 1934, only 10,700 tons of steel were fabricated--the lowest amount in the company's history. It had a net loss that year of \$49,000, and consequently went into receivership. The company's reorganization, carried out by the Securities Service Corporation of Chicago, was completed by May of 1935; the company's loss that year totaled \$19,000. Another blow to the company came on July 3, 1936, with the sudden death of co-founder Olaf Smith following an emergency appendectomy.³³

The fortunes of Kansas City Structural Steel revived in the late 1930s as the national economy slowly improved. Profits in 1936 stood at \$133,000, and at \$204,000 in 1937, while the number of employees increased to 210. Although 1938 was another dismal year with renewed layoffs and minimal profits of about \$45,000, thereafter the company rebounded. During this period Kansas City Structural Steel completed the Topeka Avenue Bridge over the Kansas River in Topeka, noted as the nation's longest continuous girder bridge at 893', with a central plate girder span 217' long. During World War II, the company rallied further by supplying over 400 amphibious landing crafts for the U.S. Navy. The plant ran on two ten-hour shifts through much of the war years. By 1946 the steel company had completely recovered; once again it employed about 500 people, and now had offices in Denver, Colorado, and Tulsa, Oklahoma. Investments in new equipment that year totaled \$100,000. In the company's fiftieth anniversary year of 1947 it grossed \$7 million in revenues.³⁴

Howard Fitch retired from active participation in his company in 1947, although he continued as company president and chairman of the board of directors until his death on November 2, 1953. His son, Howard Fitch, Jr., then rose

32. Ibid., 71-73. See *ibid.*, 87, 202-203, for lists of the major buildings in Kansas City erected by the Kansas City Structural Steel Company from 1909 to 1938. A list of mining and smelting facilities erected by the company is in *ibid.*, 90.

33. Ibid., 74-75.

34. Ibid., 78-81.

from vice president and general manager to president, and remained in that position until his early death on July 29, 1962. Glenn A. Smith, a son of Olaf Smith, had joined the company in the 1920s, and eventually became the works manager, a vice president, and a member of both the board of directors and the executive committee; he retired from the company in 1968. Kansas City Structural Steel Company meanwhile continued as one of the nation's major steel fabricators and contractors. It provided the steel for the Kansas Turnpike System in the 1950s, over time erected most of the country's mining facilities, garnered many overseas projects, and expanded its operations into the southwest United States with steel plants in Albuquerque, Phoenix, and Tucson. Its annual revenues totaled some \$20 million in 1973. Control of the company continued to reside within the Fitch family. John S. Harrow, a son-in-law of Howard Fitch, Sr., served as company president while Thomas M. Fitch, a son of Howard Fitch, Jr., acted as executive vice president.³⁵ The Kansas City Structural Steel Company closed in 1985; its facilities were acquired by the Mosher Steel Company, which continued in the business of steel fabrication and construction.³⁶

B. M. E. GILLIOZ

M. E. Gillioz of Monett, Missouri, constructed the substructure and the concrete floor of the Van Buren Bridge. The company, headed by Maurice Ernest Gillioz, was active from the early 1900s into the 1960s in the construction of highways, bridges, buildings, and other types of structures throughout Missouri, Kansas, Oklahoma, and Arkansas.

Maurice E. Gillioz was born in rural Phelps County, Missouri, in 1877. His formal education at the local schools ended with the fourth grade, and when a young man he began work as a laborer for the Santa Fe Railroad in Temple, Texas. He soon moved to St. Louis where he worked for the St. Louis and San Francisco Railroad for about twelve years, becoming foreman of a construction crew. In about 1905, this position brought him to Pierce City, a railroad division point in southwest Missouri. Here Gillioz was the successful bidder for constructing the foundation and floor of St. Mary's Catholic Church. Having secured this

35. Ibid., 87-96; Kansas City Times, 3 November 1953, 30 July 1962; Kansas City Star, 5 February 1971.

36. Missouri Directory of Manufacturing and Mining (St. Louis: Information Data Company, 1985), 205; Missouri Directory of Manufacturing and Mining (St. Louis: Information Data Company, 1986), 208.

contract, he quit his railroad job and started his own business as a general contractor.³⁷

Gillioz' business at Pierce City steadily grew from the construction of small jobs, such as sidewalks, basements, excavations, and culverts, into larger road and bridge projects. In 1914, Gillioz moved his business to Monett, Barry County, Missouri, located a short distance from Pierce City. Monett would remain his home and business headquarters for the next fifty years. In the early 1920s M. E. Gillioz began to garner numerous road and bridge construction contracts from the Missouri State Highway Department after its launching of an ambitious state-wide road-building program, one said to be tailor-made for M. E. Gillioz.³⁸ The company pioneered the use of heavy mechanized equipment in its handling of scores of road building projects in Missouri and surrounding states, while also continuing to erect many buildings and other structures. During the 1920s, within Monett alone, M. E. Gillioz constructed the Plymouth School (1923), the City Park Casino (1926), the Monett High School (1928), the Monett City Hall (1929), and the Masonic Temple (1929). The company also built the ornate, \$300,000 Gillioz Theater in Springfield, Missouri, completed in 1926.³⁹

Both Maurice Gillioz and his construction company continued to thrive during the Great Depression. In 1931, Gillioz built his own Gillioz Theater in Monett, which he would continue to own and operate for decades. By 1933, Gillioz was a millionaire. In May of the following year he assumed the liabilities of a failing Monett bank, thereby becoming the sole owner of the Gillioz Bank and Trust Company. Gillioz also came to own numerous other ventures in Monett, including the Gillioz Clothing Store, the Gillioz Motor Company, the Gillioz Implement Company, and the

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37. David D. March, The History of Missouri (New York: Lewis Historical Publishing Company, 1967), 3: 451; Nellie Alice Mills, Historic Spots in Old Barry County (Monett: Free Will Baptist Gem, 1952), 144-146; Monett Times, 6 March 1957, 18, 19 April 1962.
38. During this period, the name M. E. Gillioz referred to both the man and the construction company; in 1943 the company name was registered as the Gillioz Construction Company. Registration of Fictitious Names and Certificates of Authority for Contractors to Work in Missouri, "Gillioz Construction Company," June 1943, Plans and Records Office, Design Division, Missouri Highway and Transportation Department, Jefferson City.
39. Monett Times, 18, 19 April 1962; March, History, 451-452.

Gillioz Paint and Body Shop. In 1949, he constructed the Gillioz Office Building in Monett; the grand opening drew 2,000 visitors and an honorary parade down Broadway Street. The following year Monett recognized Gillioz as its "Outstanding Citizen of the Year."⁴⁰

The Gillioz Construction Company meanwhile remained Gillioz' principal enterprise. It maintained a reputation as one of the region's premiere construction contractors. Some of its major projects over the years included the Fifty-first Street (Route 66) Bridge over the Arkansas River in Tulsa, Oklahoma; the \$2 million Fellows Lake project near Springfield, Missouri; the Medical Arts Building in Springfield; the Blue Mountain Dam near Boonville, Arkansas; Lock and Dam No. 13 at Fort Smith, Arkansas; and the Kansas City Southwest Trafficway. Countless other projects involved highways, bridges, viaducts, public and business buildings, sewage treatment plants, hospitals, and factories. During the 1950s, the company annually secured contracts totaling \$3 to \$5 million. Continual business with the Missouri State Highway Department in itself amounted to over \$31 million by 1957. The Gillioz Construction Company then had over 100 employees and a \$228,000 payroll; half of the workers had been with the company for at least ten years, providing a dependable and experienced workforce. Chief among Gillioz' long-term associates in the business were O. E. Parscale, his general superintendent who had joined the company in 1914, and Late Taylor, a construction foreman employed since 1922.⁴¹

Maurice Gillioz demonstrated a strong loyalty to his adopted community, chiefly by continuing to headquarter his multi-million-dollar firm in Monett. His generous philanthropy and civic contributions earned him the sobriquets "Mr. Monett" and "Monett's First Citizen." Each year Gillioz would sponsor a Christmas party for the local youth at his Gillioz Theater, personally handing out shiny new quarters to each child. He also became known for his elaborate birthday parties attended by scores of his friends, employees, business associates, and government officials. Over 300 guests attended his eightieth birthday party in 1957, where Gillioz received an oil portrait, a resolution of congratulations from the Missouri State Senate, and accolades from the Chief Engineer of the Missouri State Highway Department, Rex Whitton. The Monett Times also honored him with an eighteen-page newspaper supplement outlining Gillioz' life and achievements. During the celebration, Gillioz announced his plans for the

40. Ibid.; Monett Times, 6 March 1957, 18 April 1962.

41. March, History, 452; Monett Times, 6 March 1957.

perpetuation after his death of the Gillioz Construction Company, in which he remained actively involved.⁴²

Maurice Gillioz died on April 17, 1962, shortly after his eighty-fifth birthday. He was remembered as a "tempestuous and restless community leader who loved his home town."⁴³ The Gillioz Construction Company continued into the late 1960s, generating an annual business of about \$5 million in construction projects.⁴⁴

42. March, History, 452; Monett Times, 4, 7 March 1952, 6, 11 March 1957, 18 April 1962.

43. Ibid., 19 April 1962.

44. March, History, 452.

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Spanning the Current River at
U.S. Route 60
Van Buren
Carter County
Missouri

HAER No. MO-90

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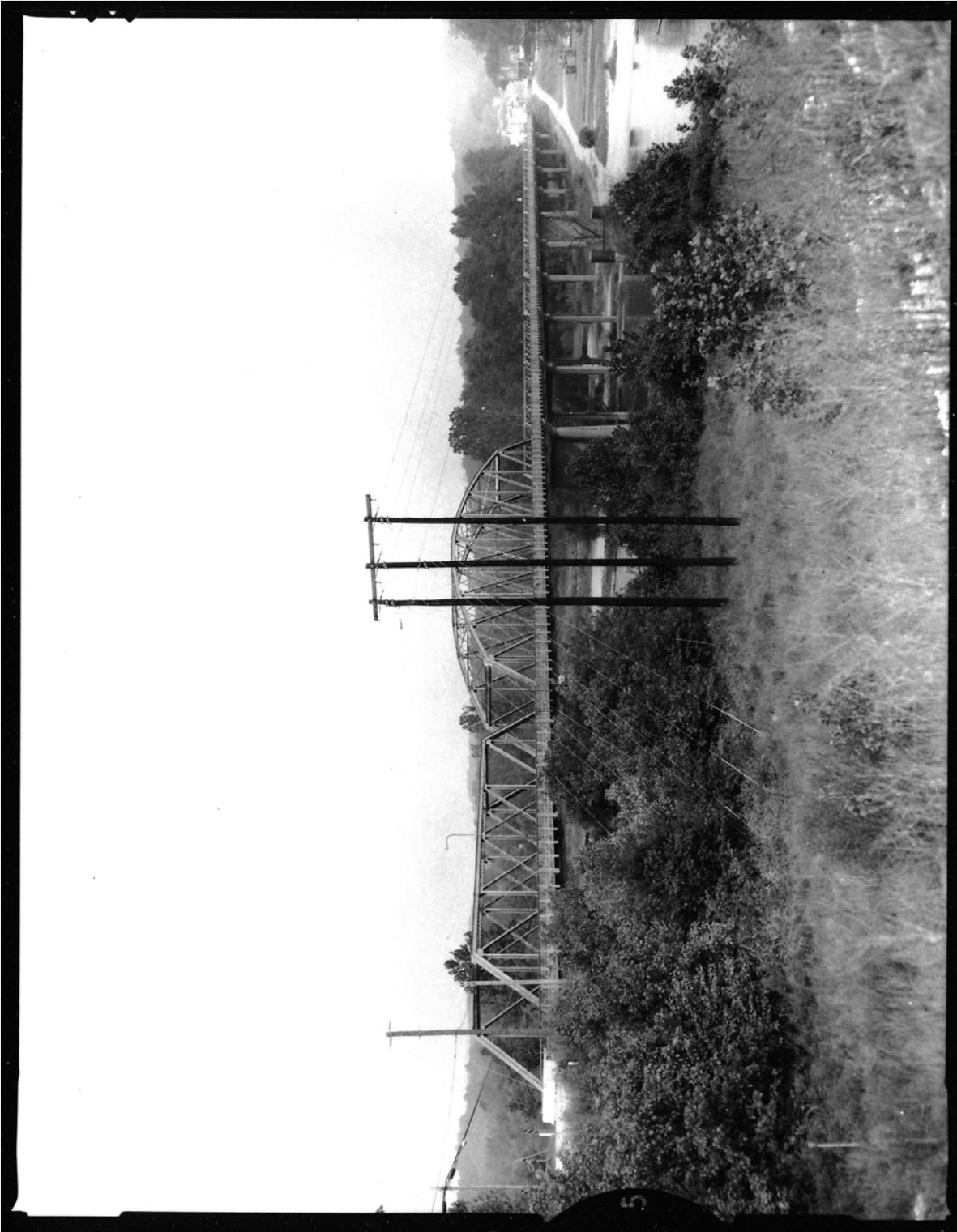
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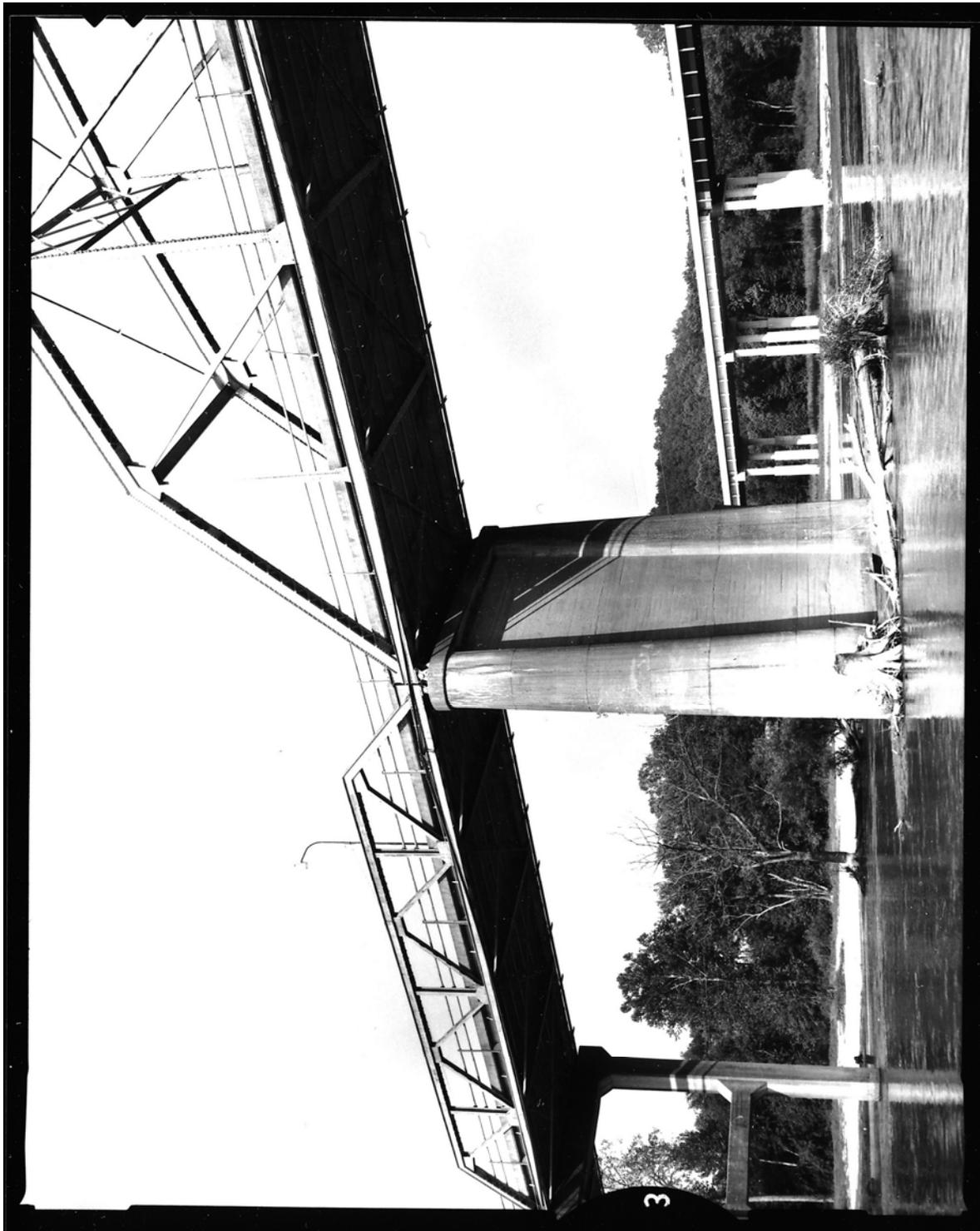
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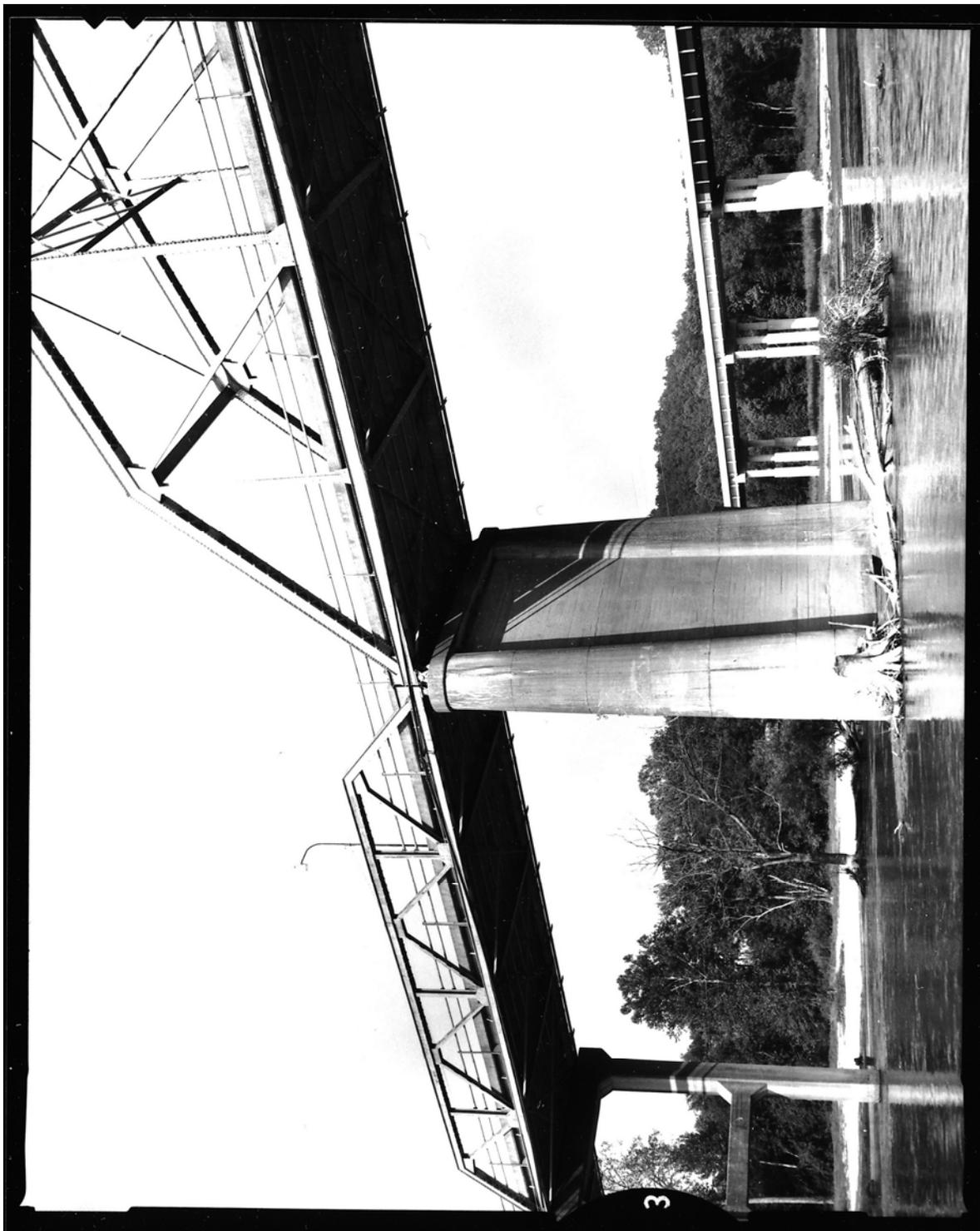
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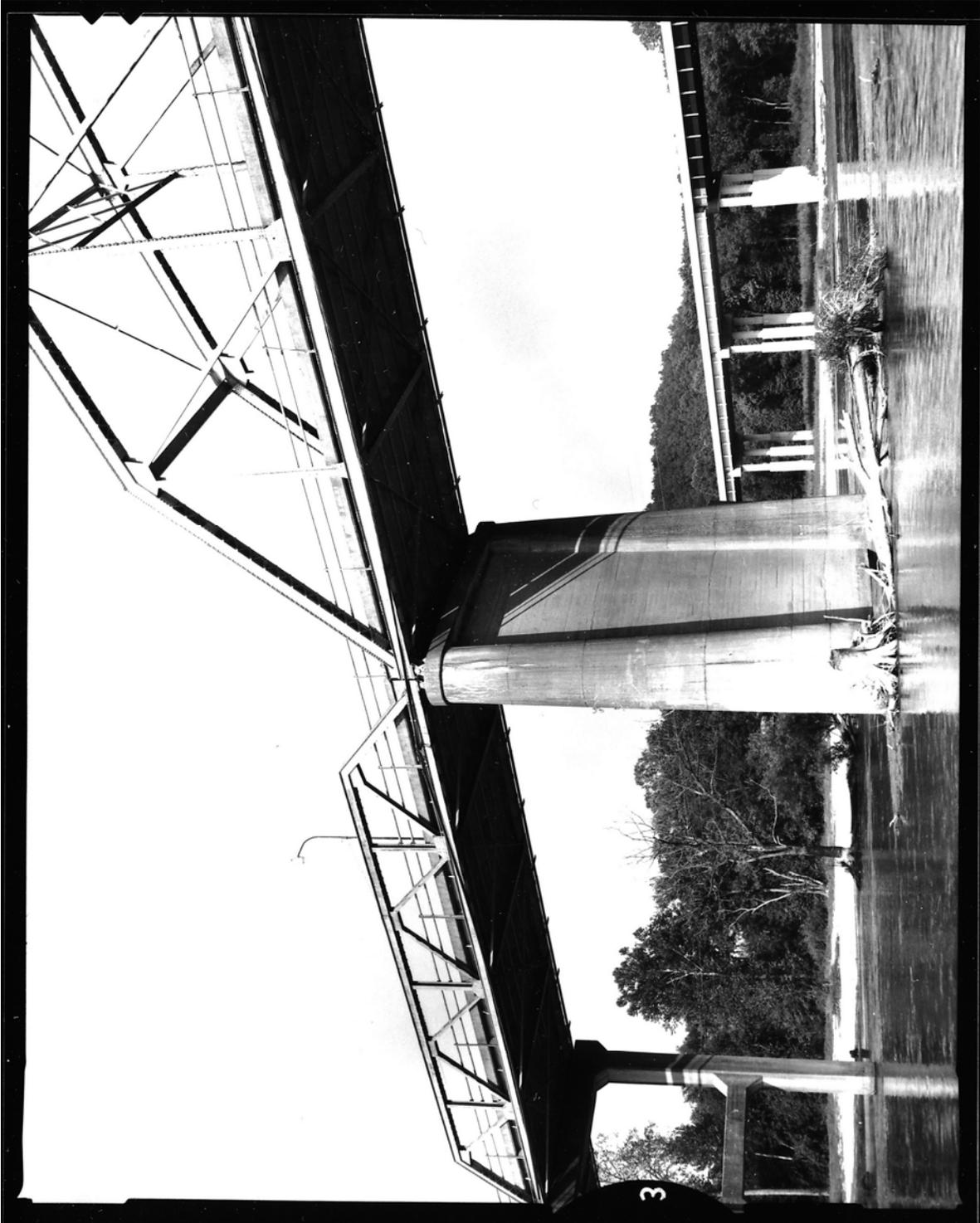
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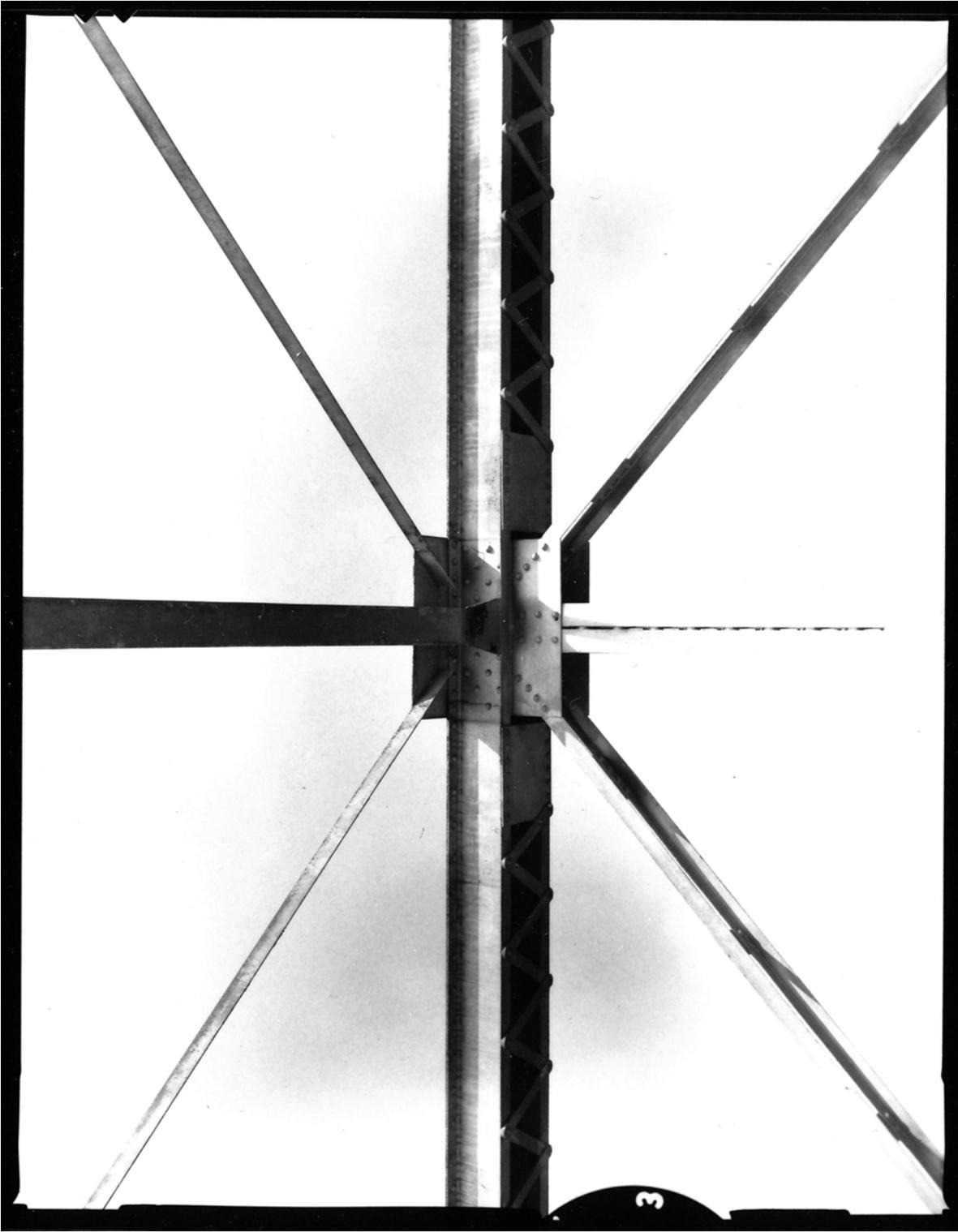
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PANEL POINT AT UPPER CHORD, SPAN NO. 1
HAER No. MO-90-15



HISTORIC AMERICAN ENGINEERING RECORD
VAN BUREN BRIDGE
TYPICAL DIAGONALS, SPAN NO. 1
HAER No. MO-90-16



HISTORIC AMERICAN ENGINEERING RECORD
VAN BUREN BRIDGE
TYPICAL FLOOR SECTION
HAER No. MO-90-17



HISTORIC AMERICAN ENGINEERING RECORD
VAN BUREN BRIDGE
SPAN NO.2 (PARKER TRUSS), VIEW TO THE
EAST
HAER No. MO-90-18



HISTORIC AMERICAN ENGINEERING RECORD
VAN BUREN BRIDGE
SOUTH PORTAL OF SPAN NO.2, VIEW TO THE
NORTH
HAER No. MO-90-19



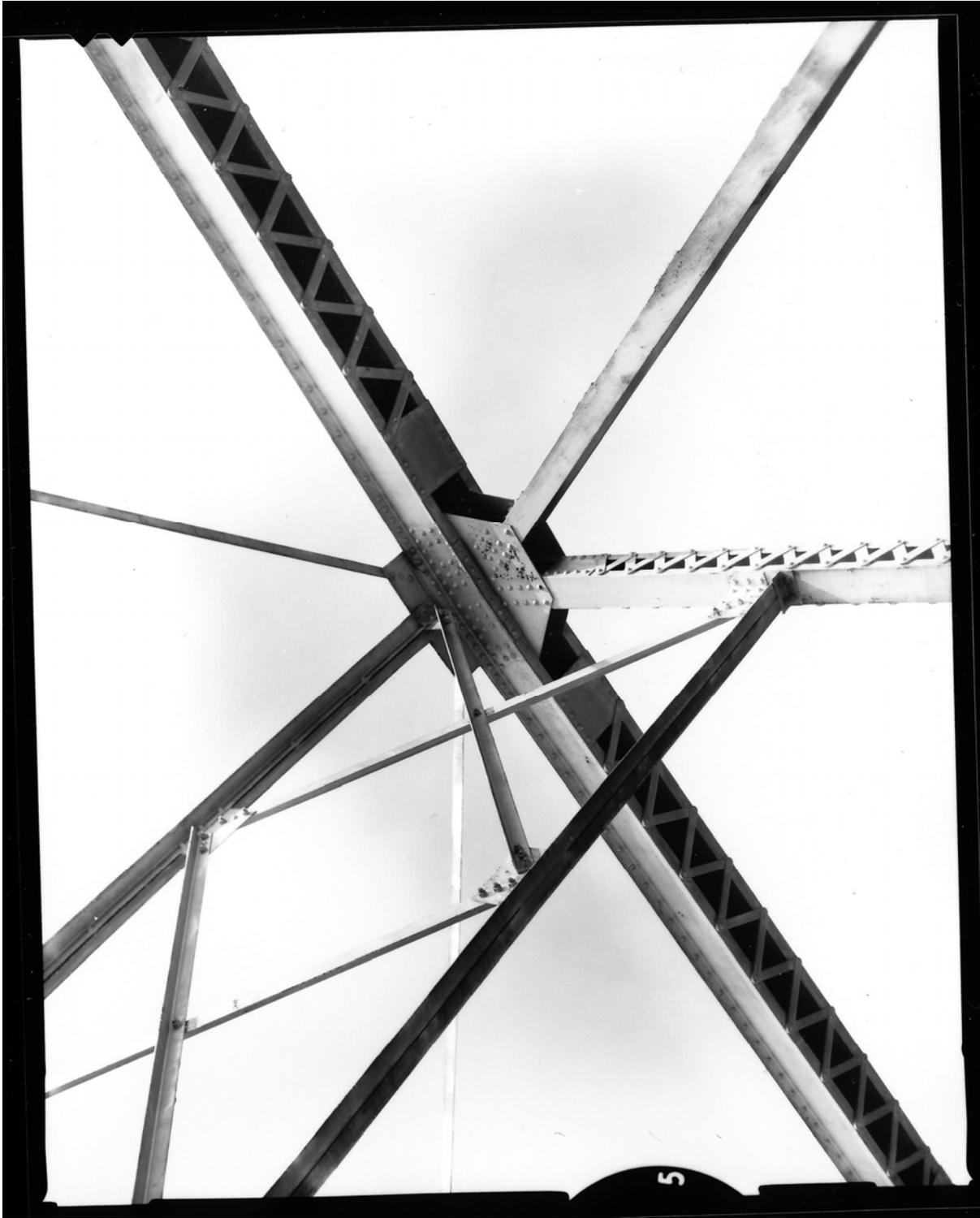
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VAN BUREN BRIDGE
HIP JOINT AT SPAN NO. 2
HAER No. MO-90-20



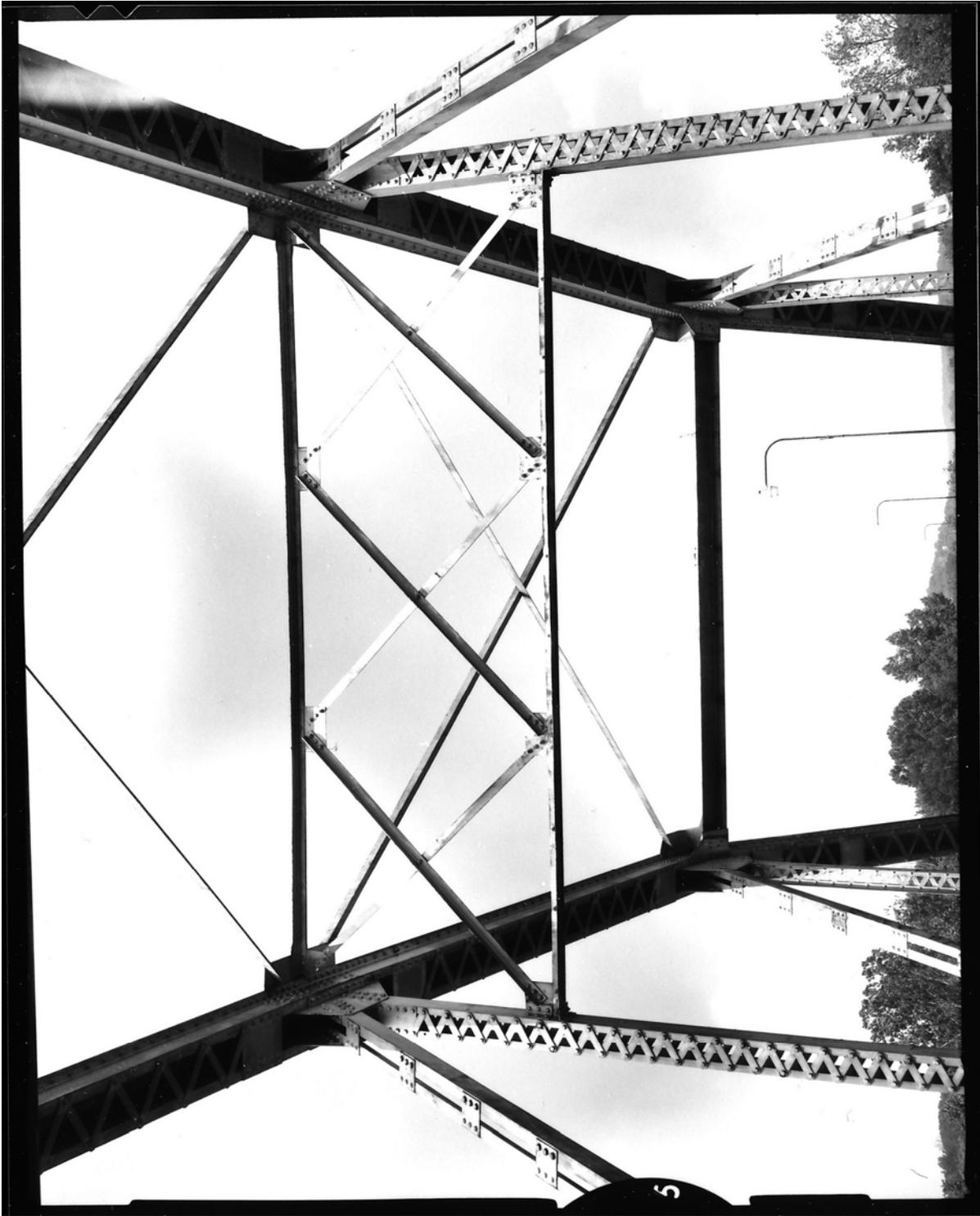
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VAN BUREN BRIDGE
PANEL POINT AT LOWER CHORD, SPAN NO. 2
HAER No. MO-90-21



HISTORIC AMERICAN ENGINEERING RECORD
VAN BUREN BRIDGE
PANEL POINT AT UPPER CHORD, SPAN NO. 2
HAER No. MO-90-22



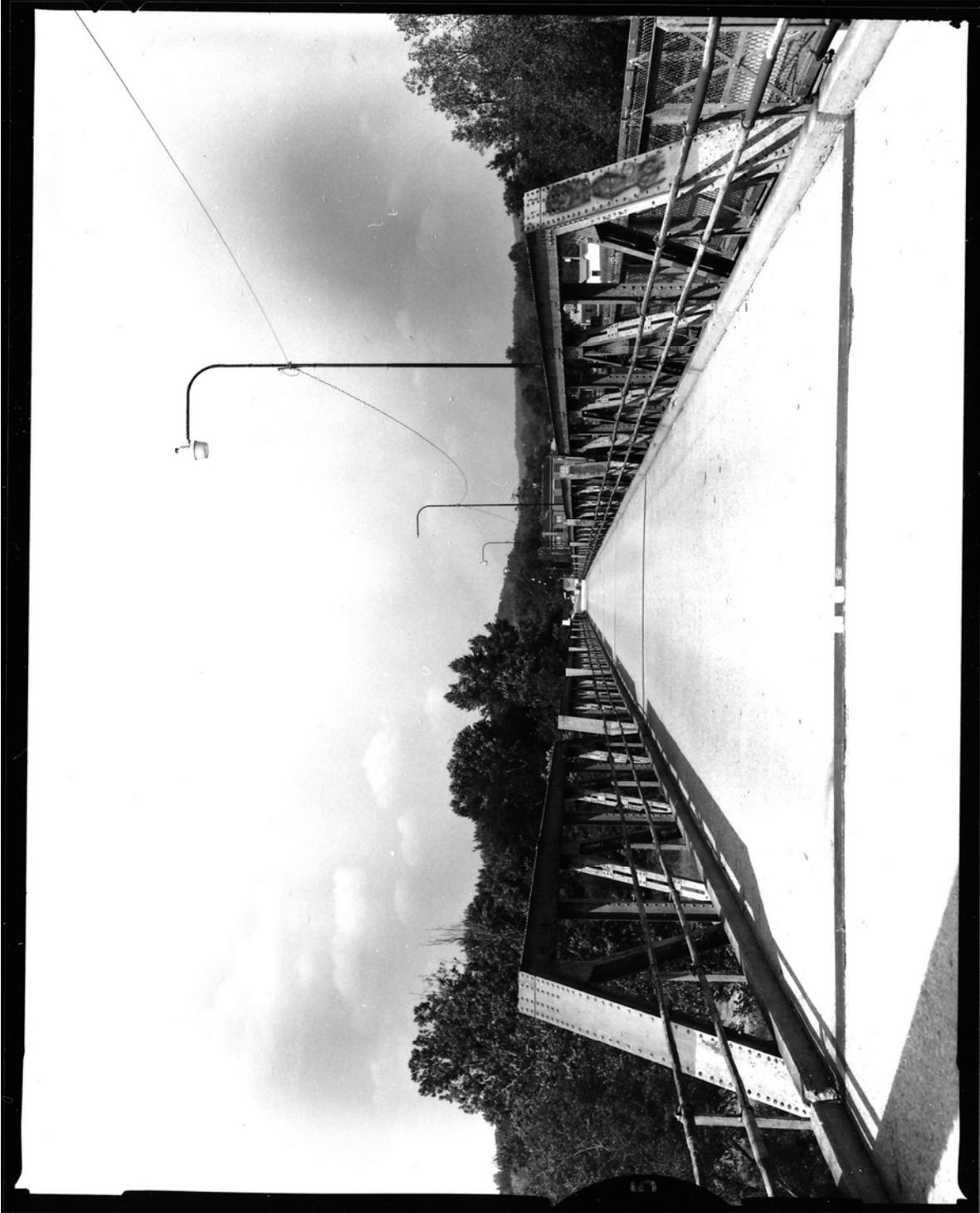
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VAN BUREN BRIDGE
TYPICAL SWAY BRACE, SPAN NO. 2
HAER No. MO-90-23



HISTORIC AMERICAN ENGINEERING RECORD
VAN BUREN BRIDGE
WARREN PONY TRUSS SPANS (SPAN NOS. 3-
12), VIEW TO THE SOUTH
HAER No. MO-90-24



HISTORIC AMERICAN ENGINEERING RECORD
VAN BUREN BRIDGE
WARREN PONY TRUSS SPANS, VIEW TO THE
NORTH
HAER No. MO-90-25



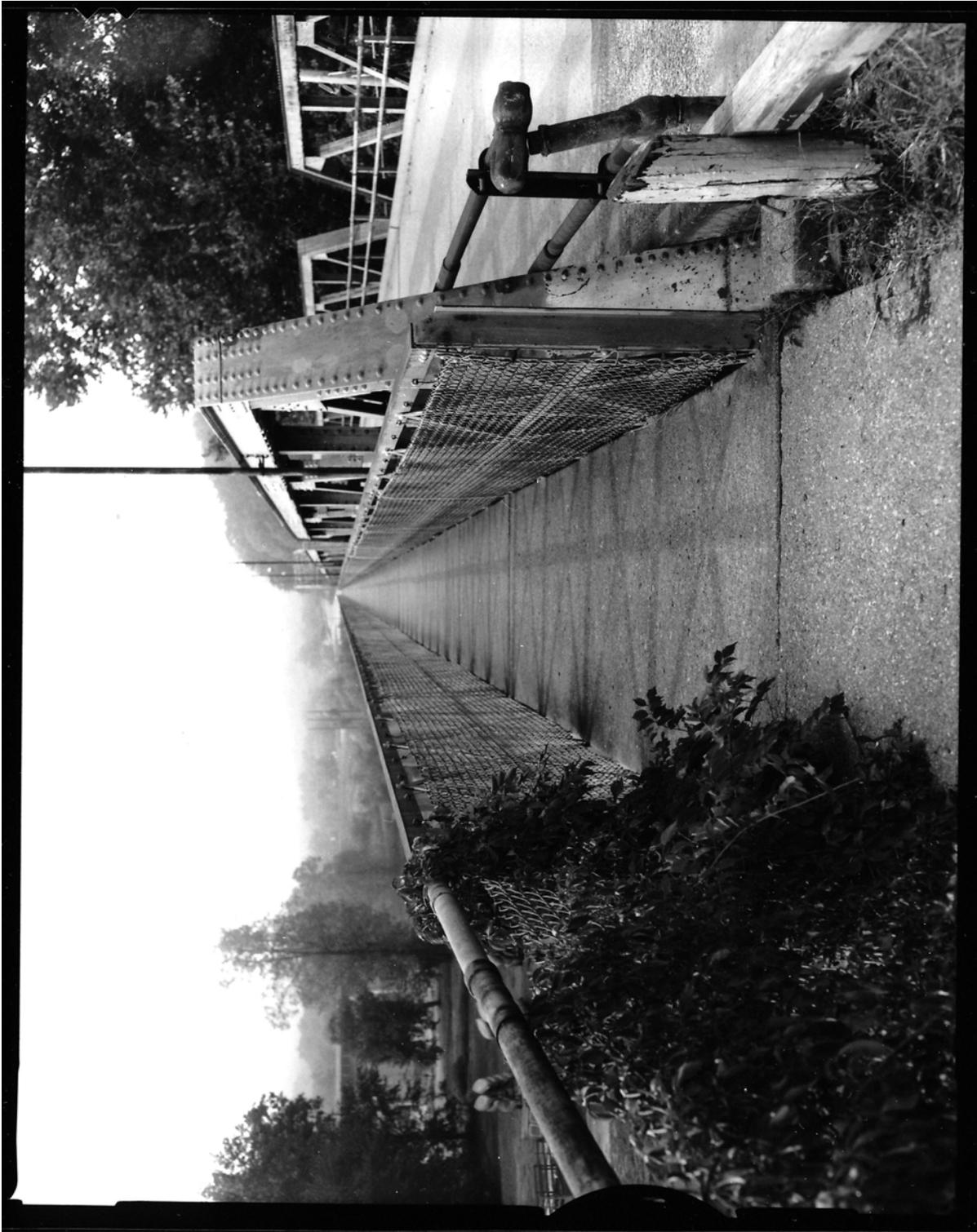
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VAN BUREN BRIDGE
HIP JOINT OF WARREN PONY TRUSS
HAER No. MO-90-26



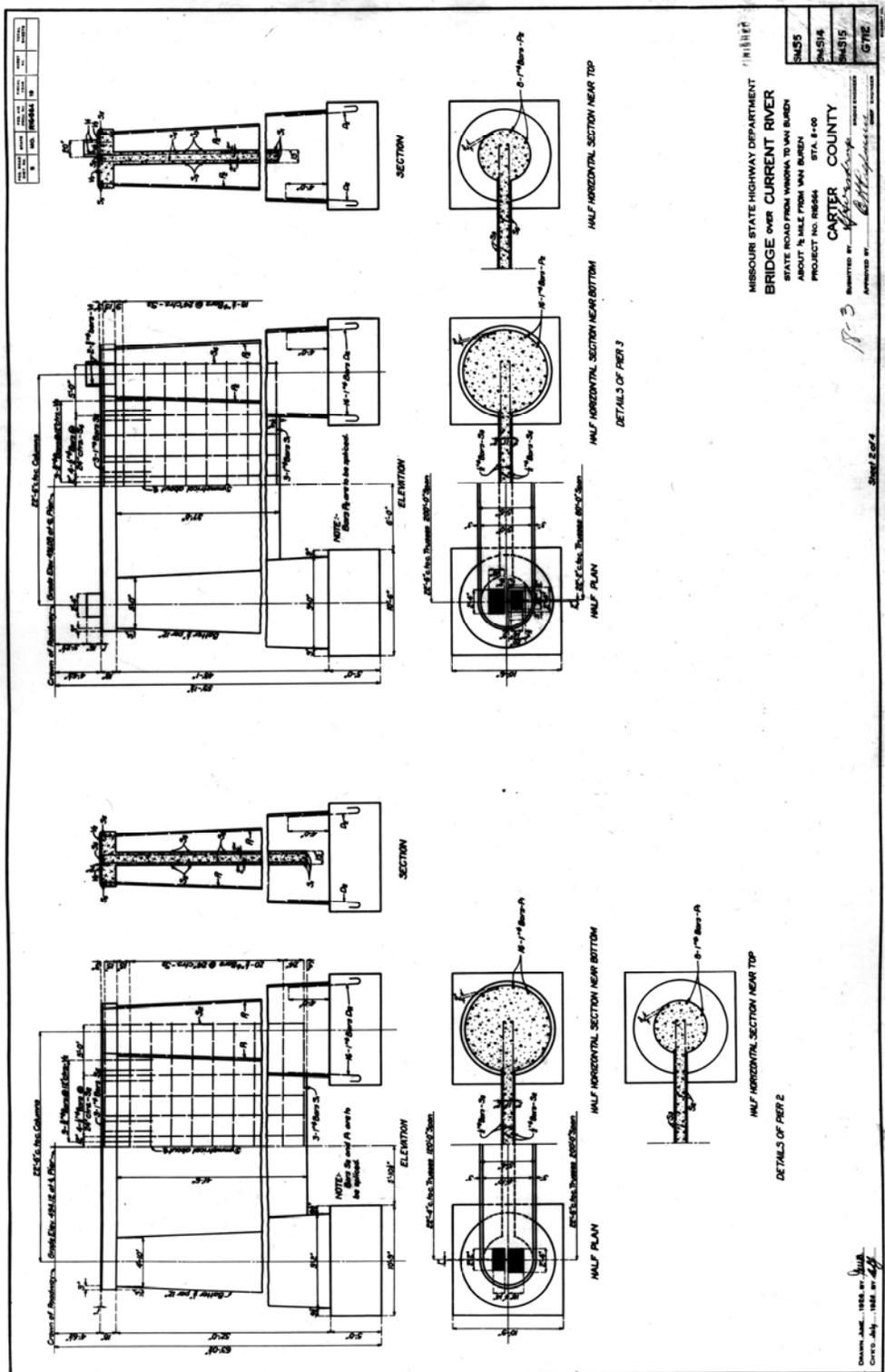
HISTORIC AMERICAN ENGINEERING RECORD
VAN BUREN BRIDGE
PANEL POINT AT UPPER CHORD, WARREN
PONY TRUSS
HAER No. MO-90-27



HISTORIC AMERICAN ENGINEERING RECORD
VAN BUREN BRIDGE
ATTACHED SIDEWALK, VIEW TO THE SOUTH
HAER No. MO-90-28



HISTORIC AMERICAN ENGINEERING RECORD
 VAN BUREN BRIDGE
 DETAILS OF PIER 2 AND PIER 3
 HAER No. MO-90-30

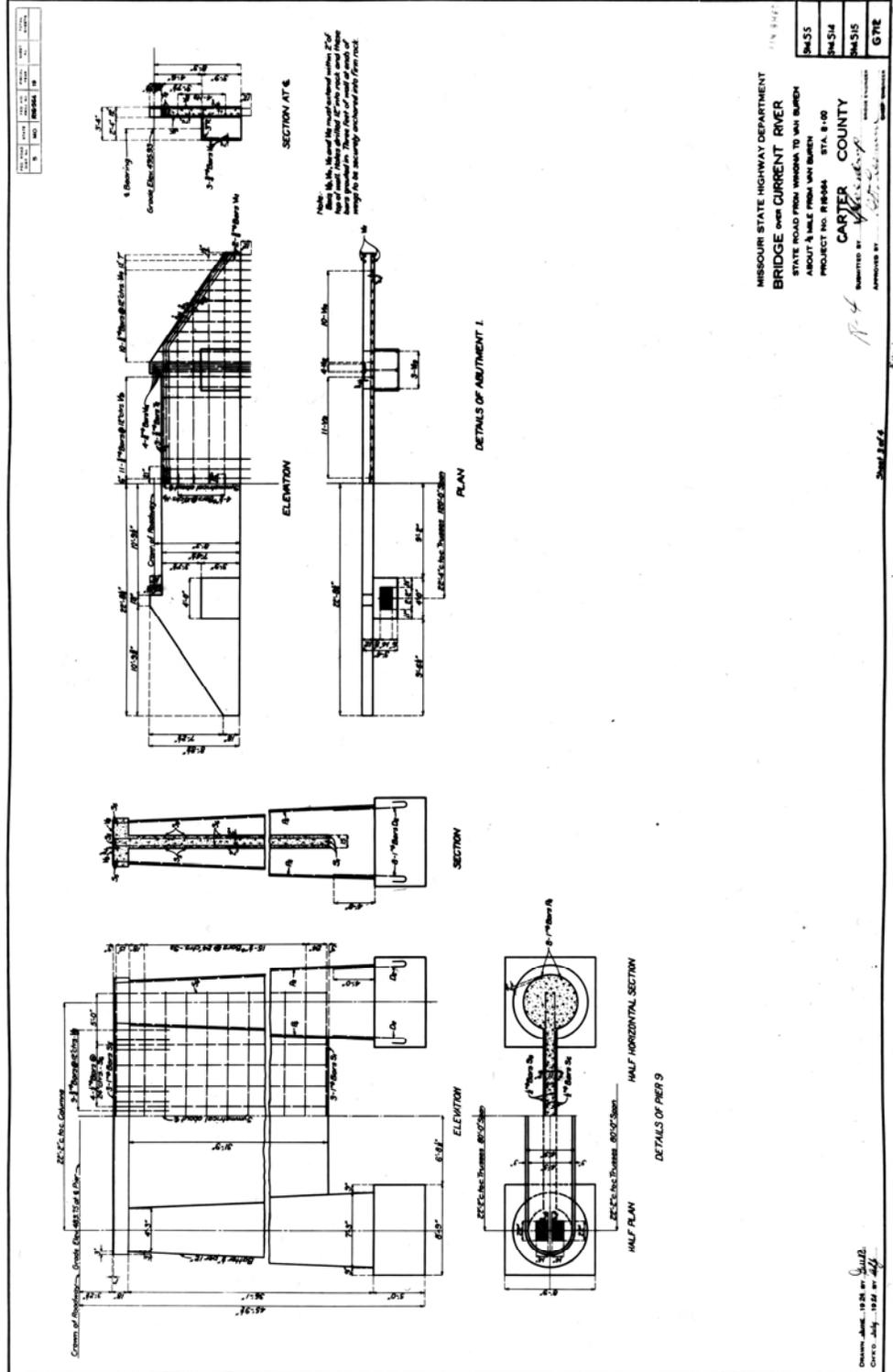


MISOURI STATE HIGHWAY DEPARTMENT
 BRIDGE OVER CURRENT RIVER
 STATE ROAD FROM WARREN TO VAN BUREN
 ABOUT 1/2 MILE FROM VAN BUREN
 PROJECT NO. R284A STA. 81+00
 CARTER COUNTY
 DRAWN BY: [Signature]
 CHECKED BY: [Signature]
 APPROVED BY: [Signature]

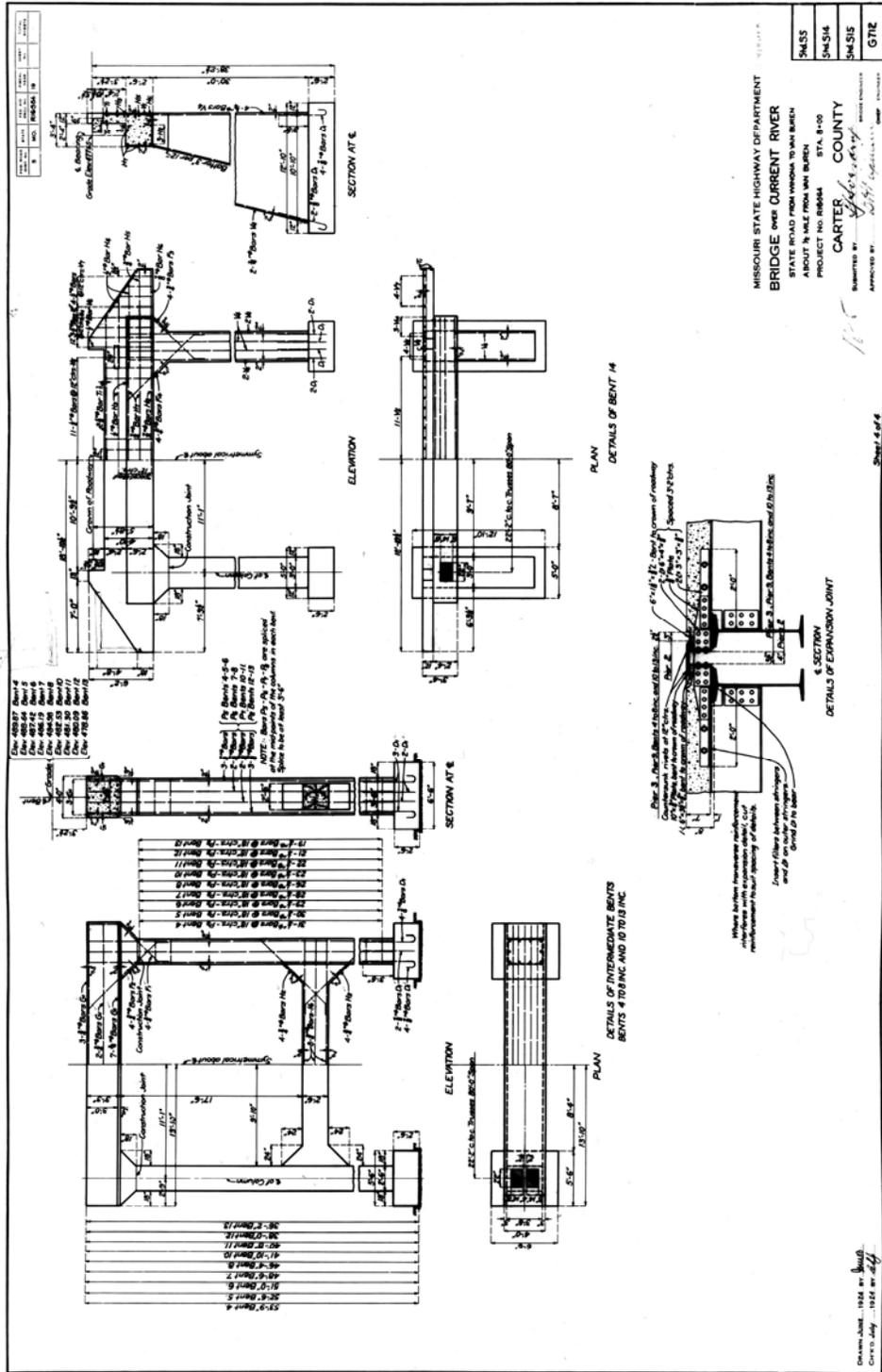
Sheet No. 4
 FINISHED

Drawn July 1938 by [Signature]
 Check July 1938 by [Signature]

HISTORIC AMERICAN ENGINEERING RECORD
 VAN BUREN BRIDGE
 DETAILS OF PIER 9 AND ABUTMENT 1
 HAER No. MO-90-31



HISTORIC AMERICAN ENGINEERING RECORD
 VAN BUREN BRIDGE
 DETAILS OF INTERMEDIATE BENTS AND
 BENT 14
 HAER No. MO-90-32

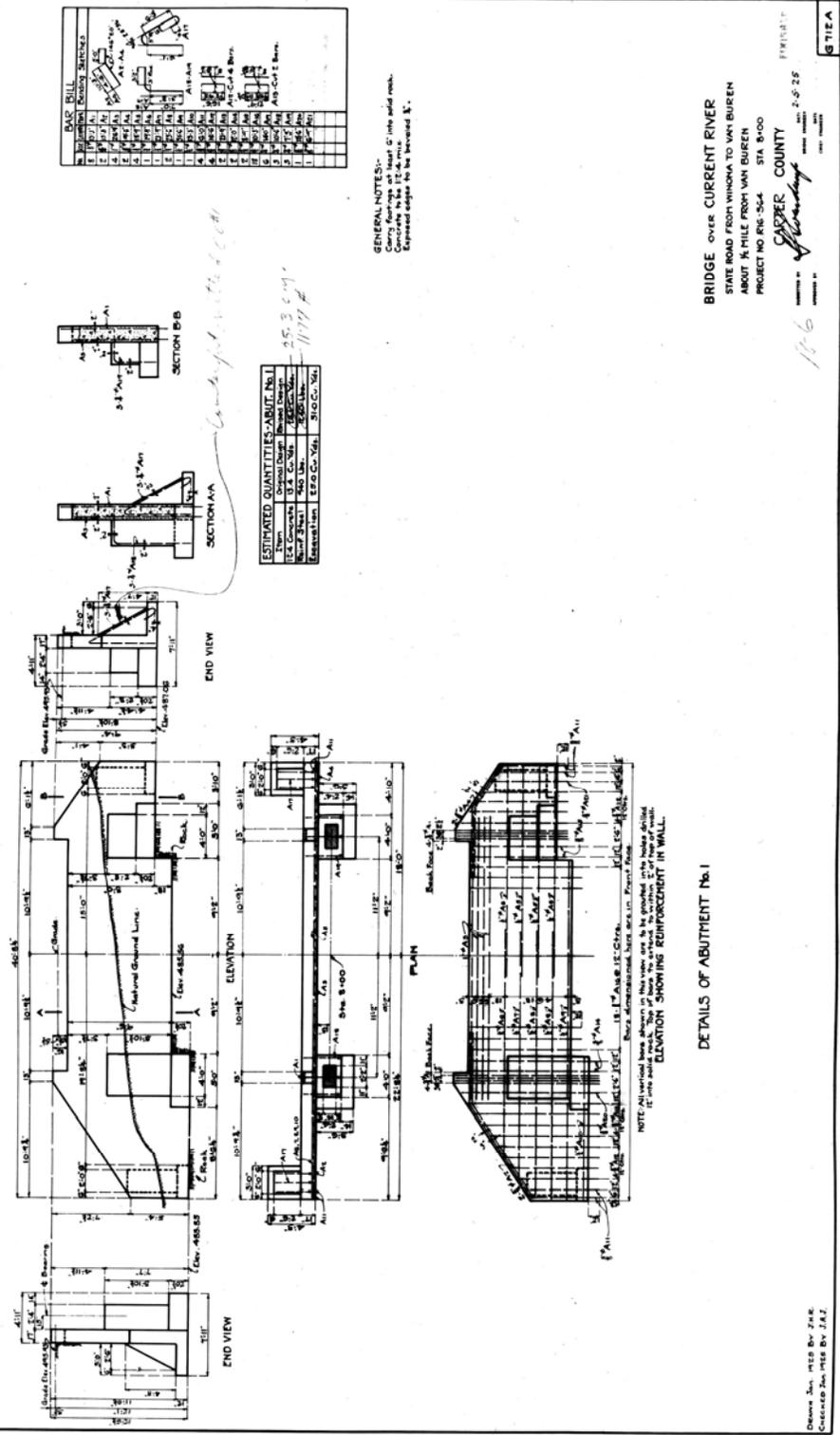


Checked June 1924 by [Signature]
 Corrected July 1924 by [Signature]

SMSS	MISSOURI STATE HIGHWAY DEPARTMENT
SM-S14	BRIDGE OVER CURRENT RIVER
SM-S14	STATE ROAD FROM BENTON TO VAN BUREN
SM-S14	PROJECT NO. B-100
SM-S14	CARTER COUNTY
SM-S14	ETA. B-100
SM-S14	APPROVED BY: [Signature]
G7E	Sheet 4 of 6

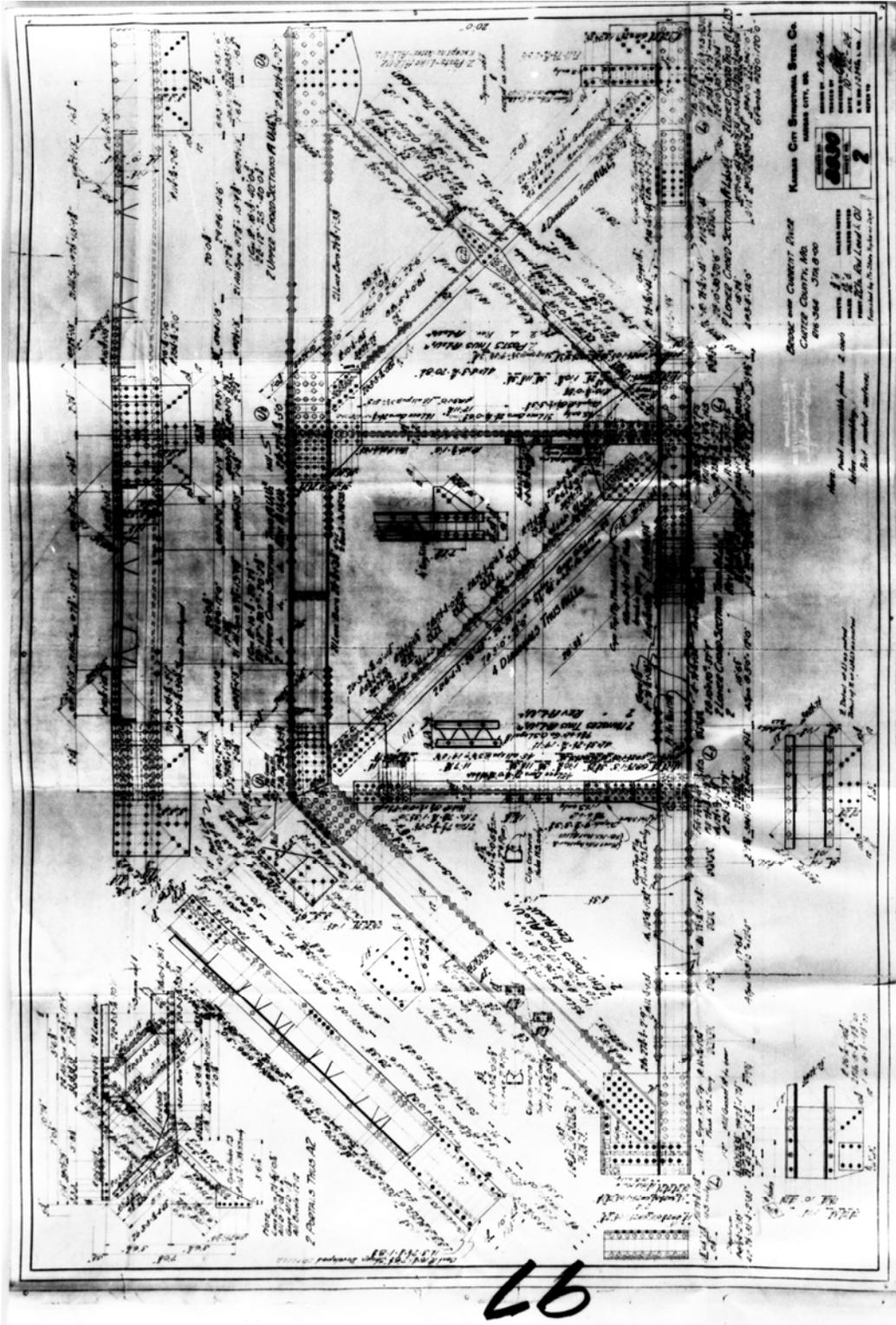
HISTORIC AMERICAN ENGINEERING RECORD
 VAN BUREN BRIDGE
 DETAILS OF ABUTMENT NO. 1 (REVISED)
 HAER No. MO-90-33

MISSOURI STATE HIGHWAY DEPARTMENT

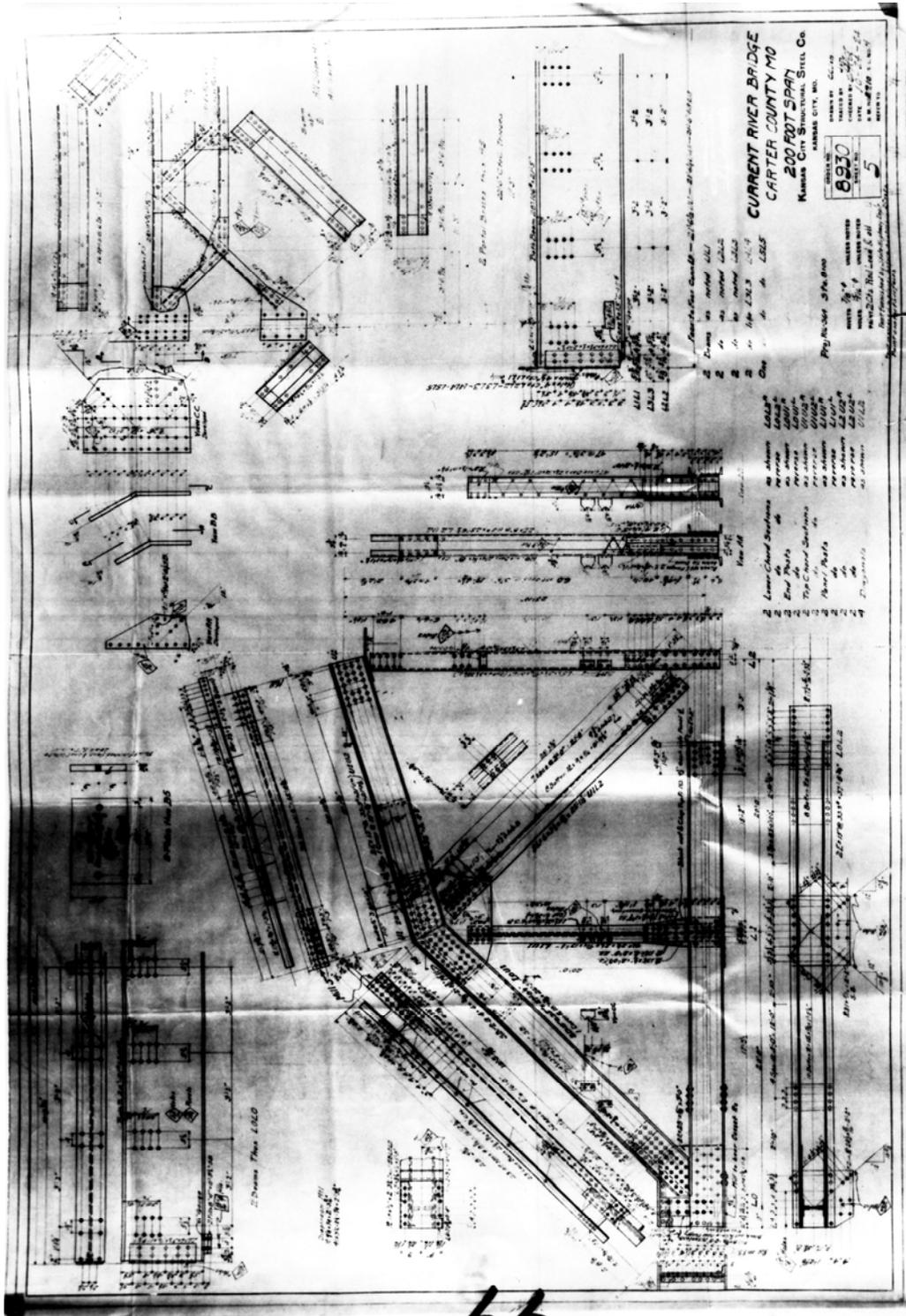


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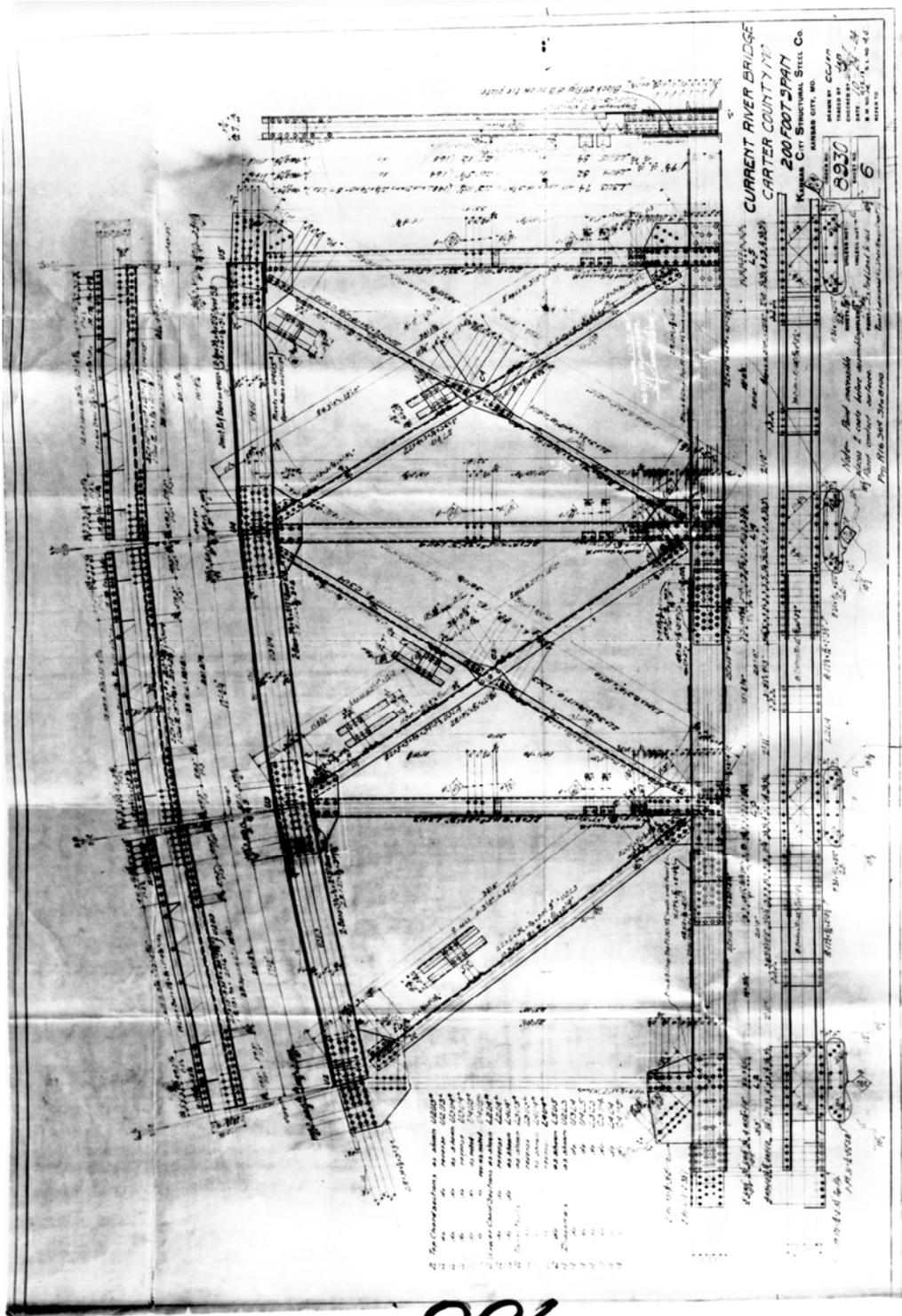
HISTORIC AMERICAN ENGINEERING RECORD
VAN BUREN BRIDGE
DETAILS OF 120' SPAN
HAER No. MO-90-35



HISTORIC AMERICAN ENGINEERING RECORD
 VAN BUREN BRIDGE
 DETAILS OF 200' SPAN
 HAER No. MO-90-37

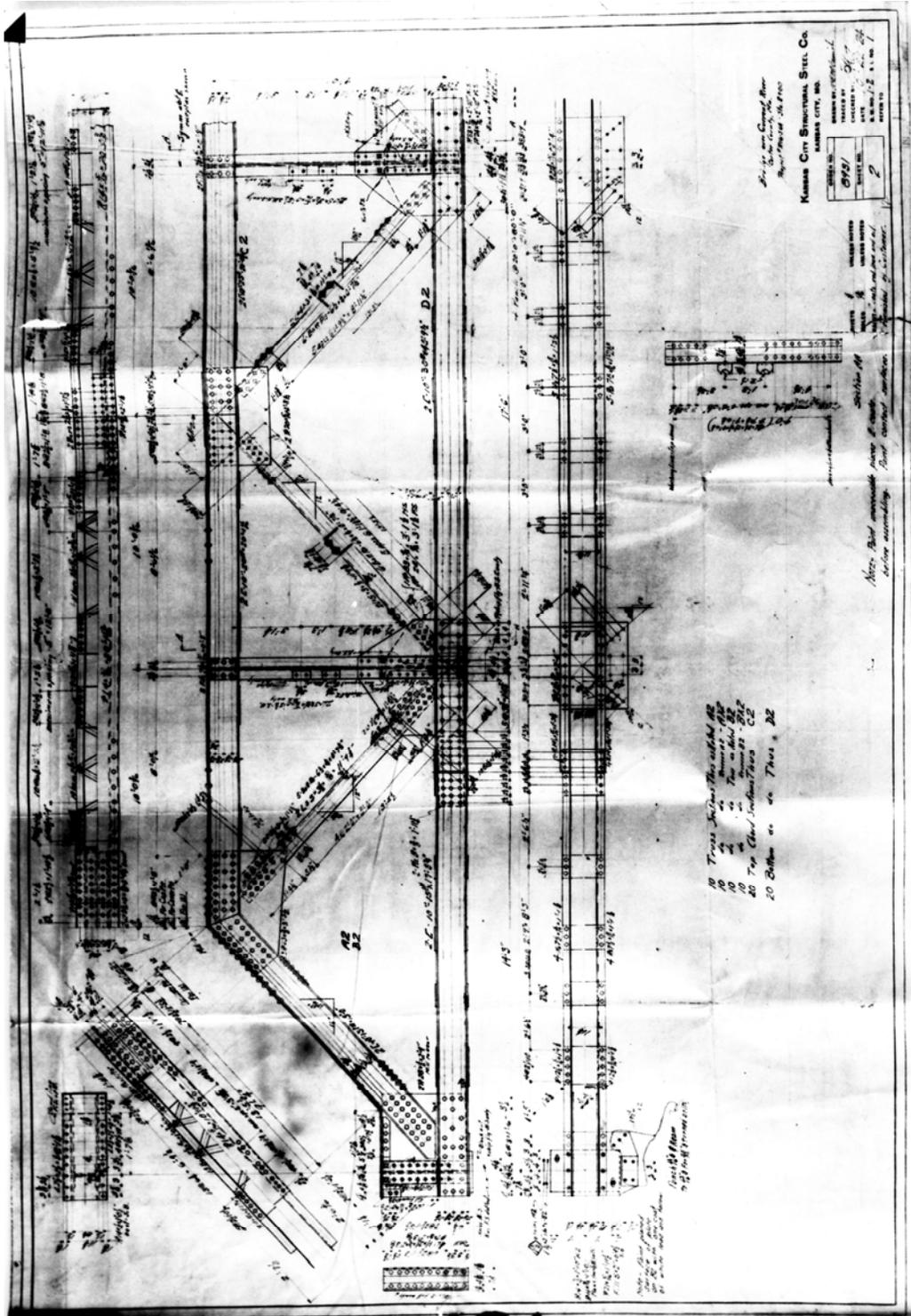


HISTORIC AMERICAN ENGINEERING RECORD
 VAN BUREN BRIDGE
 DETAILS OF 200' SPAN
 HAER No. MO-90-38

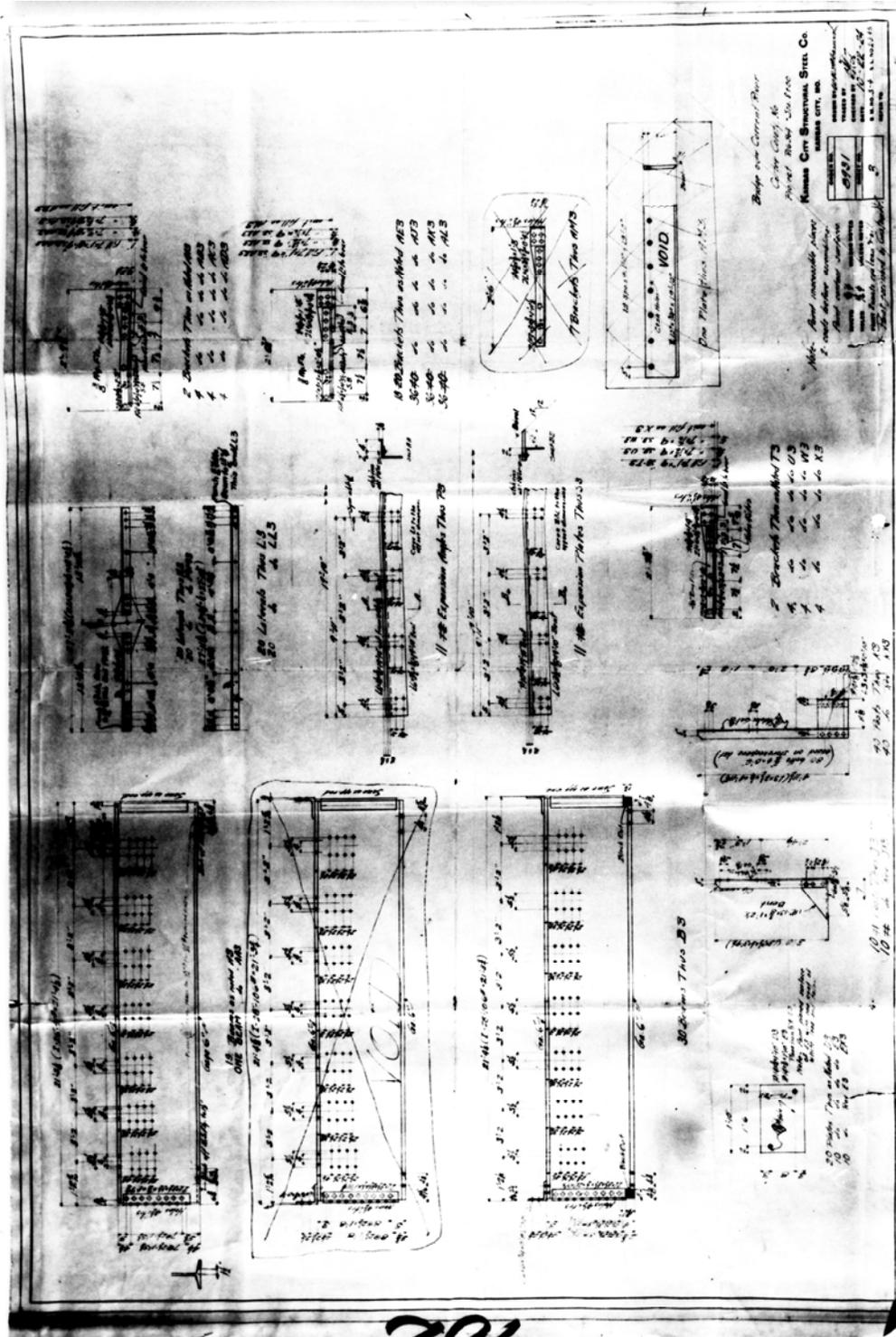


100

HISTORIC AMERICAN ENGINEERING RECORD
 VAN BUREN BRIDGE
 DETAILS OF 80' SPAN
 HAER No. MO-90-39



HISTORIC AMERICAN ENGINEERING RECORD
 VAN BUREN BRIDGE
 BEAMS AND LATERALS
 HAER No. MO-90-40



Bridge and Current Pier
 Cast Iron
 Steel
 Kansas City Structural Steel Co.
 Kansas City, Mo.

ITEM	QUANTITY	UNIT	PRICE	TOTAL
1	1	PIER	100.00	100.00
2	1	PIER	100.00	100.00
3	1	PIER	100.00	100.00
4	1	PIER	100.00	100.00
5	1	PIER	100.00	100.00
6	1	PIER	100.00	100.00
7	1	PIER	100.00	100.00
8	1	PIER	100.00	100.00
9	1	PIER	100.00	100.00
10	1	PIER	100.00	100.00
11	1	PIER	100.00	100.00
12	1	PIER	100.00	100.00
13	1	PIER	100.00	100.00
14	1	PIER	100.00	100.00
15	1	PIER	100.00	100.00
16	1	PIER	100.00	100.00
17	1	PIER	100.00	100.00
18	1	PIER	100.00	100.00
19	1	PIER	100.00	100.00
20	1	PIER	100.00	100.00
21	1	PIER	100.00	100.00
22	1	PIER	100.00	100.00
23	1	PIER	100.00	100.00
24	1	PIER	100.00	100.00
25	1	PIER	100.00	100.00
26	1	PIER	100.00	100.00
27	1	PIER	100.00	100.00
28	1	PIER	100.00	100.00
29	1	PIER	100.00	100.00
30	1	PIER	100.00	100.00
31	1	PIER	100.00	100.00
32	1	PIER	100.00	100.00
33	1	PIER	100.00	100.00
34	1	PIER	100.00	100.00
35	1	PIER	100.00	100.00
36	1	PIER	100.00	100.00
37	1	PIER	100.00	100.00
38	1	PIER	100.00	100.00
39	1	PIER	100.00	100.00
40	1	PIER	100.00	100.00
41	1	PIER	100.00	100.00
42	1	PIER	100.00	100.00
43	1	PIER	100.00	100.00
44	1	PIER	100.00	100.00
45	1	PIER	100.00	100.00
46	1	PIER	100.00	100.00
47	1	PIER	100.00	100.00
48	1	PIER	100.00	100.00
49	1	PIER	100.00	100.00
50	1	PIER	100.00	100.00
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53	1	PIER	100.00	100.00
54	1	PIER	100.00	100.00
55	1	PIER	100.00	100.00
56	1	PIER	100.00	100.00
57	1	PIER	100.00	100.00
58	1	PIER	100.00	100.00
59	1	PIER	100.00	100.00
60	1	PIER	100.00	100.00
61	1	PIER	100.00	100.00
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63	1	PIER	100.00	100.00
64	1	PIER	100.00	100.00
65	1	PIER	100.00	100.00
66	1	PIER	100.00	100.00
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69	1	PIER	100.00	100.00
70	1	PIER	100.00	100.00
71	1	PIER	100.00	100.00
72	1	PIER	100.00	100.00
73	1	PIER	100.00	100.00
74	1	PIER	100.00	100.00
75	1	PIER	100.00	100.00
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77	1	PIER	100.00	100.00
78	1	PIER	100.00	100.00
79	1	PIER	100.00	100.00
80	1	PIER	100.00	100.00
81	1	PIER	100.00	100.00
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97	1	PIER	100.00	100.00
98	1	PIER	100.00	100.00
99	1	PIER	100.00	100.00
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